PULP & PAPER

JULY 1, 1955

Hold Your Hats for One of Biggest Expansion Years

see page 39

PULP & PAPER PRESENTS

APA 1955 Review and Reports (Pulpwood Annual)

see page 65

Stebbins research laboratory and engineering offices. Watertown, New York

RESEARCH and ENGINEERING have made Stebbins the World Leader

- **Designing**
- **Installing**
- **Maintaining**

Corrosion - Resistant

LININGS and TILE TANKS

The experience of practically all companies in the pulp and paper industry proves that it will pay you to put your corrosion-resistance problems in the hands of Stebbins specialists. Complete service, from original design to year-round maintenance. Get the facts.

Write for Bulletin A-153

SINCE 1884
Specialists in Design Installation and Servicing of Linings and Tile Tanks

SEMCO

STEBBINS

Engineering and Manufacturing Company, Watertown, N. Y.

STEBBINS ENGINEERING CORP. — 1504 TOWER BLDG., SEATTLE, WASH.

CANADIAN STEBBINS ENGR. & MFG. CO., LTD. — CASTLE BLDG., MONTREAL, CANADA

In back of your TV Set is a RICE BARTON papermaking machine!

Good reception in your television set is dependent upon a combination of the papermaker's skill and precision machinery. Rice Barton papermaking machines, in skillful hands, produce condenser tissues .0002" thick with tolerances measured in hundred thousandths.

Rice Barton machines will make paper to meet your most exacting requirements.

RICE BARTON CORPORATION

Worcester, Massachusetts

Paper Machine Builders Since 1837

West Coast Distributor: Ray Smythe . . 501 Park Building • Portland, Oregon

RB7-55

This woodyard chain combines high strength and ruggedness

C-132 File hard Promal combination chain-- a popular chain for pulpwood handling

HERE'S a chain that's strong enough to handle hardwoods, yet is low in over-all cost. Little wonder that C-132 is so widely used on log conveyors.

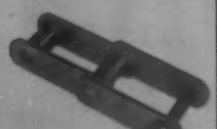
It's the same story on every drive and conveying job. There's a chain in Link-Belt's complete line that matches your exact needs. Next time you're planning a new mill—or revamping an old one—call Link-Belt. There's a sales office or distributor near you that can save you money on your drives and conveyors.

LINK-BELT

CHAINS AND SPROCKETS

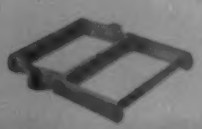
13,505

No ONE chain serves every purpose--get the RIGHT one from Link-Belt's complete line



SS bushed chain is a heavy-duty chain for severe service such as on barking drum.

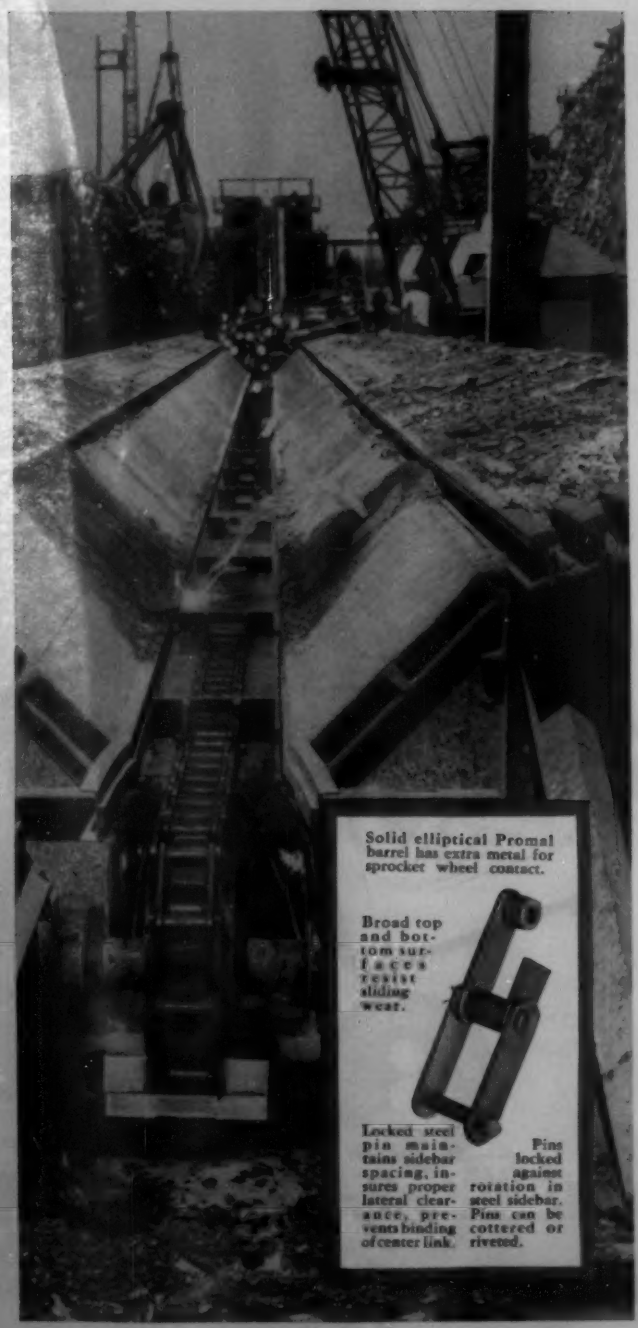
Riveteless chain, with its light weight and high strength, is ideal for conveyors.



Class H combination drag chain offers long life for tough refuse conveying. Rigid block links are reversible.

LXS chains are made to close tolerances from carefully selected steels. Ideal for rugged drive and conveyor service.

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in all Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.


Solid elliptical Promal barrel has extra metal for sprocket wheel contact.
Broad top and bottom surfaces resist sliding wear.
Locked steel pin maintains sidebar spacing, insures proper lateral clearance, prevents binding of center link.
Pins locked against rotation in steel sidebar. Pins can be cottered or riveted.

Pulpwood conveyor employing C-132 Link-Belt combination chain, with pusher attachment every 6 ft.

PULP & PAPER

Production and Management Magazine of the Industry

VOLUME 29 NUMBER 7

July 1, 1955

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STRICTLY PERSONAL

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PULP & PAPER

EDITORIAL PAGE

An Undesirable Pulpwood Measure

It seems not only appropriate, but urgent, that in this special PULPWOOD ANNUAL issue of PULP & PAPER, we call attention to measures in Congress that have alarmed many leaders and can be mildly described as undesirable.

Bills have been introduced in the U. S. Senate and House which propose eventual establishment of parity prices for pulpwood and other controls.

Various leaders of this industry have expressed their objection to such price supports and controls. The American Pulpwood Association announces it will watch the measure closely to keep members informed.

Senators Humphrey (Minn.), Neuberger (Ore.) and Sparkman (Ala.) are authors of the Senate bill, S. 2105. Rep. Blatnik (Minn.) introduced the companion HR 6582. Both were referred to their agriculture committees where it is hoped more conservative heads will recognize how undesirable they are. The bills would establish a system of price reporting of farmers' forest products, expansion of research in their marketing and other studies as a basis for recommending parity prices within two years.

The bills are completely contrary to Secretary Benson's reasonable, gradual efforts to require farmers to learn how to swim in the economic waters, and lean less on government.

If there should be price supports for pulpwood, why not for woodpulp, paper, paper products, ad infinitum? We might have asked the same question years ago when "vote-buying-by-legislation" reached its high point of asininity with supports for all kinds of other products of the soil—cotton, grains, etc. And why not?

However, the voters of America and, apparently those of England, too, have indicated the Free World is heading away from such dangerous shoals of restrictive controls.

Cordiner and McCabe Agree

The No. 1 job of industry today is the development of a second and a third line of business managers, executives and supervisors, properly trained to move up the ladder and take over responsibilities.

The authorities for this statement include such men as Ralph Cordiner, president of General Electric, and T. B. McCabe, president of Scott Paper.

Addressing an audience that included pulp and paper executives recently, Mr. Cordiner said this problem is the main limiting factor for industry and business. These men must be trained if business is to make the progress necessary to keep pace with the growing economy.

Right along with this, he said, was a major problem of communications between business management and the people in their organizations.

Once a budget is approved, Mr. Cordiner said management spends all of its time working on the problems of the years ahead. It is all for the future.

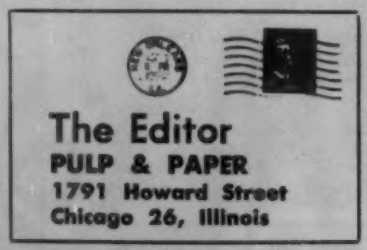
A lot of forward looking business leaders have said much the same thing as Mr. Cordiner and Mr. McCabe as to the serious need for trained executives, ready to step in the breach. The problem is often most serious in smaller, family owned enterprises. Recent mergers of companies have broadened the opportunities for a better solution to this problem.

10 Rules to Join Coronary Club

1. Your job comes first; personal considerations are secondary.
2. Go to the office evenings, Saturdays, Sundays and holidays.
3. Take the brief case home on the evenings when you do not go to the office. This provides an opportunity to review completely all the troubles and worries of the day.
4. Never say no to a request—always say yes.
5. Accept all invitations to meetings, banquets, committees, etc.
6. Do not eat a restful relaxing meal—always plan a conference for the meal hour.
7. Fishing and hunting are a waste of time and money—you never bring back enough fish or game to justify the expense. Golfing is n.g., too.
8. It is a poor policy to take all the vacation time that is provided for you.
9. Never delegate responsibility to others—carry the entire load at all times.
10. If your work calls for traveling, work all day and drive all night to make your appointment for the next morning.

★ ★ ★

IT'S WHAT YOU LEARN after you know it all that really counts.—*Anon.*



READERS CORNER

No anonymous letters will be considered but names may be withheld if desired.

Big Future for Tropical Woods

I feel a great future lies ahead in the semi-tropical and tropical countries in the utilization of fast growing hardwoods, perhaps in neutral sulfite cooking of these woods.

BRIAN L. SHERA
Technical Service, Penn Salt Mfg. Co. of Washington (who has made many trips into Latin America)

"One of Finest on Any Mill"

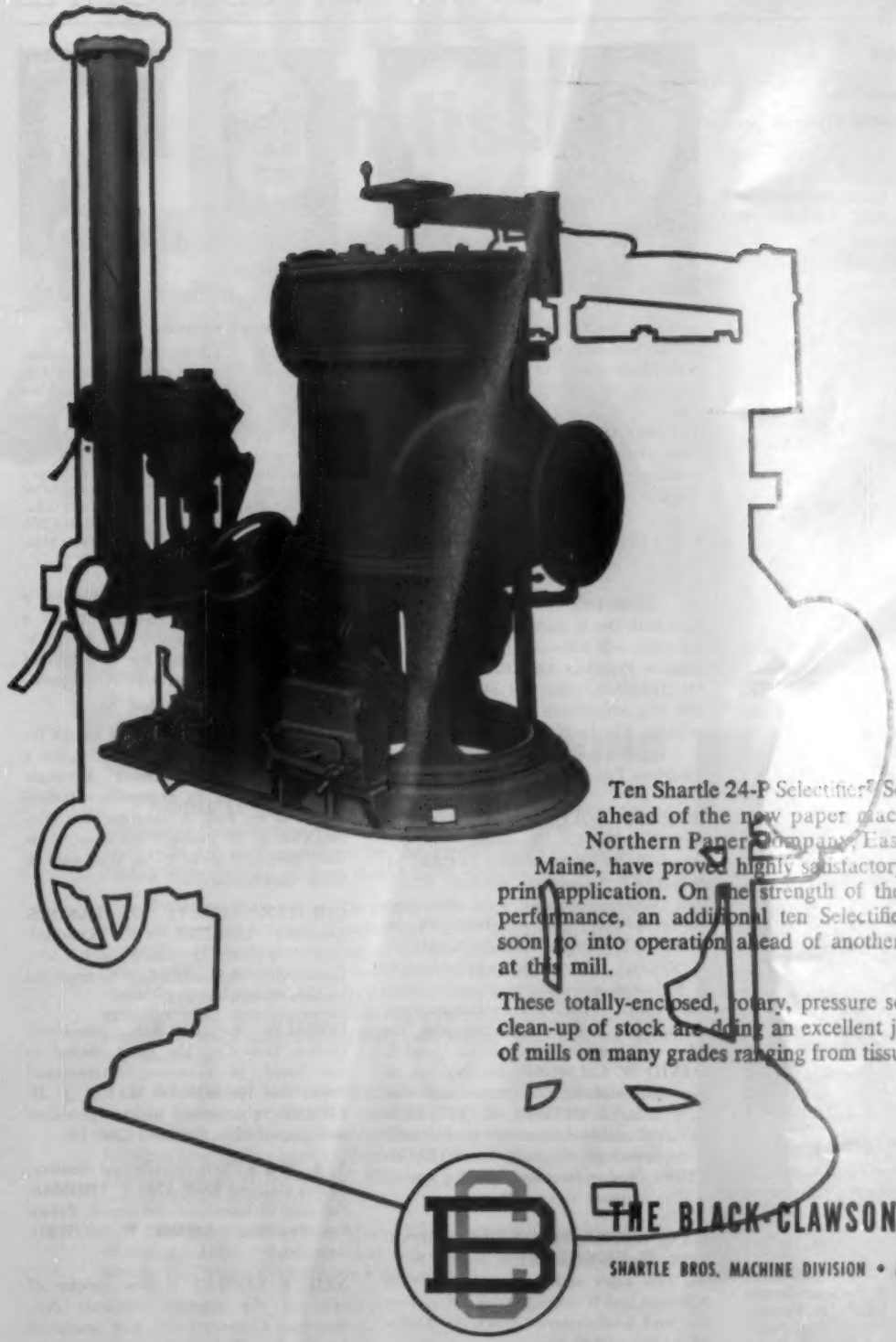
To say I was very much pleased with your recent article on Great Northern Paper Co. is putting it altogether too mildly. I think it is one of the finest articles I have ever read on any paper mill.

C. H. KENT
Special Asst. to President, Hadley Falls Trust Co., Holyoke, Mass. (Former Hercules Powder Mgr. in Holyoke.)

"One of the Best"

I consider PULP & PAPER to be one of the best done of all industry and trade magazines. I see a lot of them, dealing with all types of industries.

Sales Mgr., a major chemical supply co.



Ten Shartle 24-P Selectifier® Screens installed ahead of the new paper machine at Great Northern Paper Company, East Millinocket, Maine, have proved highly satisfactory on this newsprint application. On the strength of their outstanding performance, an additional ten Selectifier Screens will soon go into operation ahead of another new machine at this mill.

These totally-enclosed, rotary, pressure screens for final clean-up of stock are doing an excellent job in hundreds of mills on many grades ranging from tissue to boxboard.

THE BLACK-CLAWSON COMPANY

SHARTLE BROS. MACHINE DIVISION • MIDDLETOWN, OHIO

STRICTLY PERSONAL

NORTHEAST NEWS

New Supt. at Knowlton; Hammermill, Oxford Promotions

ERNEST ALTON, for 27 years with Knowlton Bros., Watertown, N.Y., is the new superintendent there, according to **DAVID C. KNOWLTON**, president. He is a native of Canada and has been asst. supt. under the late **VERNON C. WATTERS**, who died May 4.

HAROLD L. JUNGMANN has been appointed sales manager, eastern district, National Lead Co.'s Titanium Pigment Corp., covering metropolitan N.Y. and New England areas. He has been assistant to the general sales mgr. of Titanium since 1948 and has been with them since 1924.

DUDLEY A. WARD is new assistant treasurer, Scott Paper Co., after completing a 16-month course at Harvard School of Business Administration. He was selected from 78 students as one of 10 Baker fellows for outstanding records.

R. P. (TOM) PRICE, vice president in charge of mfr., Hammermill Paper Co., announces two promotions: **FRED E. BAHRENBURG** from assistant general supt., to general supt. He has a B.S. in pulp and paper from N.Y. State College of Forestry and joined Hammermill in 1948, after 18 years with Strathmore Paper. **ROBERT S. YOUNG**, former assistant supt. of mfg. since 1952, to mfg. supt., succeeding **ARTHUR O. SPIERLING**, who retired. Mr. Young has been with Hammermill 38 years starting as a helper on rewinders.

Take Over New Positions

STANLEY G. CALDER (left), has joined Union Bag & Paper Corp. as General Asst. to the Secretary and Treasurer. He has had broad experience in insurance and was with John C. Paige & Co., before joining Union.

ROBERT F. NELSON (right), new Gen. Mgr. of Sales Dept. of Shellmar-Betner Div. of Continental Can Co., Mt. Vernon, Ohio. He helped to found, then engineered and managed the Glassine Paper Co. over 20 years ago. He was Exec. Vice Pres. at Rhinelander Paper since 1947. An Annapolis graduate, he served in the Navy in two World Wars.

T. F. SPEAR, vice president, public relations, Oxford Paper Co., was named outstanding citizen of Rumford-Mexico for 1954.

J. P. (JACK) DEWITT has resigned as of Aug. 1 as Orr Felt & Blanket Co. rep. in Pa., N. J., Del., Md., Va. and West Va., and **MILES HAMILTON**, who has been with Orr in manufacturing and service work, will take over the territory, announces President **MORRISON B. ORR**. Mr. Hamilton, wife and two daughters, will live somewhere in southeast Pennsylvania. Mr. DeWitt accepted a position in a family-owned automobile agency in Kingston, Pa.

WALTER HOLLAND, mill manager, Oxford Paper Co., Rumford, Me., announced six promotions: **JAMES M. WISHART**, supervisor machine coated mill, becomes supervisor of the plain paper mill. He succeeds **ROBERT M. WISHART**, who has retired. **CLEMENT G. STEIDL**, electrochemical plant supt., is technical assistant, plain paper mill. **EDWIN G. WIGGETT**, asst. supervisor, plain paper mill, is operating supt. for plain paper machines, A, B, C, 1 and 2. **DAVID W. GILMORE**, day foreman, to operating supt. for plain paper machines 3, 4, 5, and 6. **GEORGE E. PRENTISS**, technical assistant, machine coated mill, is supervisor of the mill and **EARL D. THOMAS**, day foreman, machine coated mill, is assistant supervisor.

HANS W. FORSTER and **ART JOHNSTON**, Forster-Johnston Co., Buffalo, N.Y., are new sales and engineering reps in Northern and Western N.Y., Northwestern Pa., and Southeastern Ontario for Multi-Metal Wire Cloth Co.

BENJAMIN H. ROBERTS, president, Bird & Son, Inc. from 1935 to 1946, died at Boston, May 26, at age 57. He was a native of Eureka Springs, Ark., and a graduate of Washington U., St. Louis, in 1917. He joined Bird & Son in 1921 and became mfg. manager in 1933 and president 1935.

Changes at Penobscot

PERSONNEL CHANGES at Penobscot Chemical Fibre Co., Great Works, Me. (l to r) LYNWOOD S. HATCH, Vice pres. and Mgr. of mill, has retired but continues on Board of Directors. EDWARD W. KEITH, Supt., Soda Div., becomes Mgr. of Mills and GUST C. E. JOHANSON moves from Asst. to Supt., Sulfite Div., as FRANCK P. MORRISON advances from Asst. to Supt., Soda Div. Not shown is FRANK B. HARLOW, Supt., Sulfite Div., who now is Asst. Mgr. of Mills.

DR. JOSEPH J. THOMAS, assistant research director, S. D. Warren Co., has a son, junior in chemistry at Carnegie Tech., switching to Marquette Medical School in the Fall. A daughter was valedictorian at St. Joseph's Academy, Portland, Me., will go to U. of Wisconsin to study bio-chemistry.

CHESTER (CHET) G. LANDES, American Cyanamid Co., Stamford, Conn., recently returned with Mrs. Landes from Bermuda where he tried out his new Retina camera.

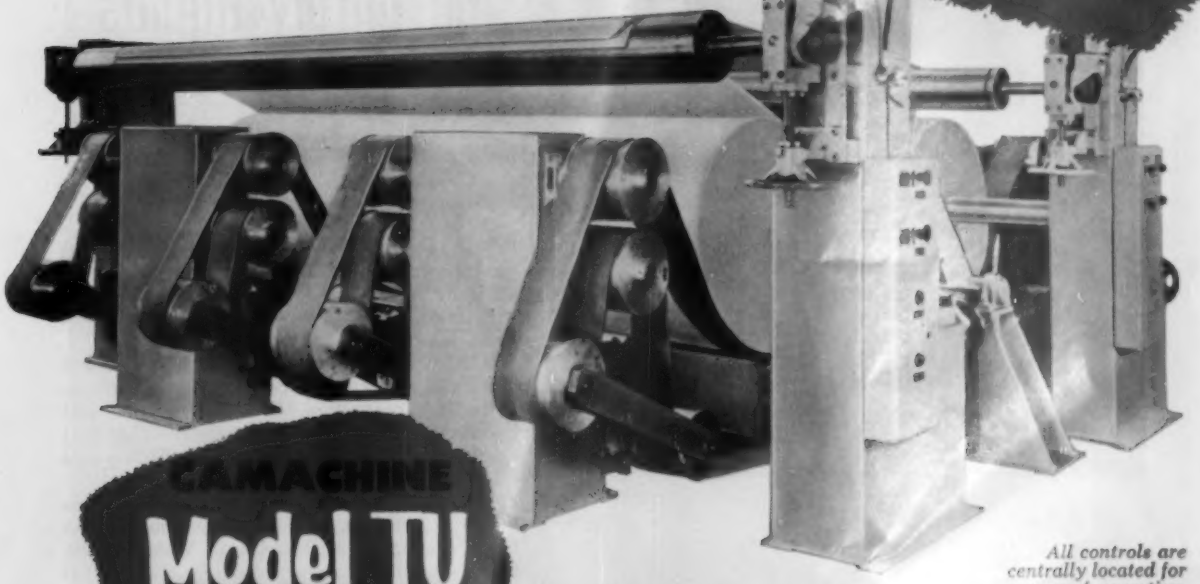
DONALD B. LOURIE, president, Quaker Oats Co., has been elected to the board of directors, International Paper Co. He replaces **MAJOR J. H. FRIEND**, who retired as vice president and general mgr., Southern Kraft Div.

A. B. WALKER is new budget director, Brown Co., and **EDWARD T. THOMAS**, manager of insurance and credit, Brown Co., according to **STUART W. SKOWBO**, treasurer.

NEIL B. CONLEY is new director of sales of the organic chemicals div., American Cyanamid Co., it is announced by **V. E. ATKINS**, div. manager. He joined the company in 1931 as manager of its Ultramarine Co.

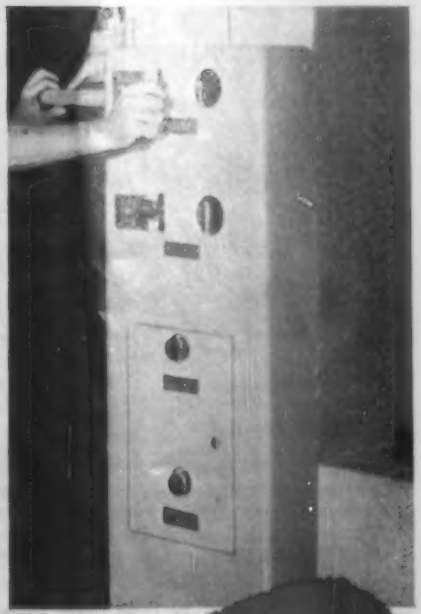
Continued on page 10

gentle with tissue



CAMACHINE Model TU DOUBLE SURFACE UNWIND

All controls are centrally located for ease of operation.



MODEL TU unwinds two tissue mill rolls simultaneously, combining them to make two-ply web at speeds up to 3500 fpm. Mill rolls are surface-driven by the gentle, positive contact of rubber-impregnated endless woven belts, selected for long wear.

Positive pay-off of the webs, even with cut-of-round mill rolls, is assured through a combination of design features. For example: tension control, to minimize stretch and eliminate "snap-offs", is maintained from 0 and up through the adjustable variable speed drive. Mill roll faults, such as "baggy ends" or misalignment, are corrected through vertically adjustable compensating rolls and horizontally adjustable self-aligning reel bar bearings.

Additional features include the centralized push-button control station; pneumatic operation of the reel bar latches; automatic reel bar ejection to reduce downtime; and provisions for disengaging the back section when running single-ply tissue. Installation is at floor level with no pits or holes required to accommodate the drive belts.

In every respect the Model TU assures the high standards of dependability which are demanded in continuous paper mill service... *Follow Camachine Engineering!*

Don't wind up with less than a Camachine

CAMERON MACHINE COMPANY • 61 Poplar Street • Brooklyn 1, N. Y.

WHAT'S NEWS AT BRISTOL . . .

Bristol Liquid Level Gauges keep tabs on unruly liquids

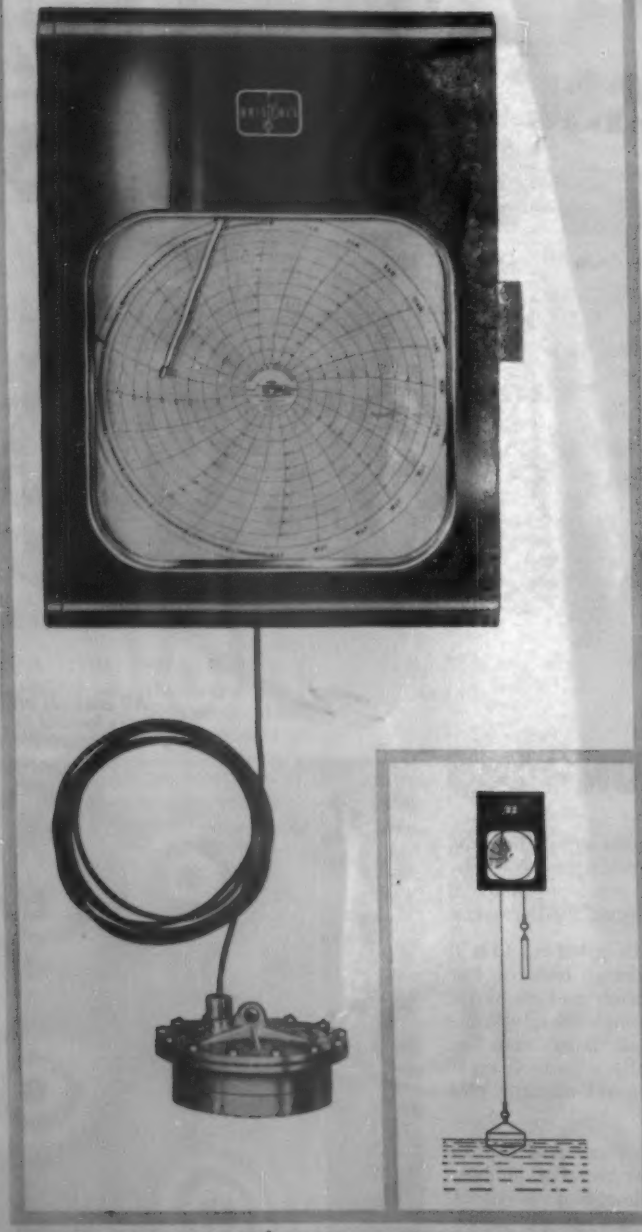
Measuring or controlling the levels of liquids can be quite a problem at times.

Especially if the liquid is flowing, turbulent, corrosive, covered with ice, carrying solid matter, or contained in a closed vessel where its surface is under static pressure.

Solving any of these problems is easy with a Bristol Liquid Level Gauge. These widely-used precision instruments indicate, record, and automatically control the level of almost any liquid without difficulty. They'll read in feet, inches, fathoms – any unit of measurement you desire.

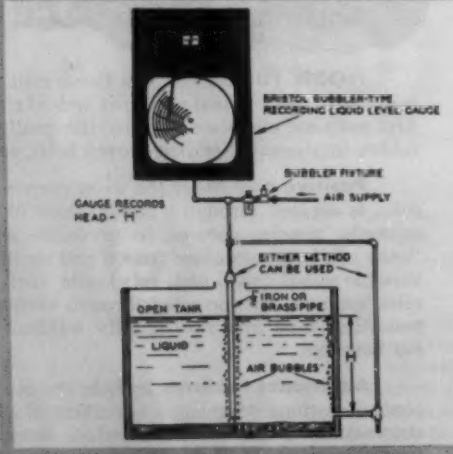
What's more, there's a standard Bristol Liquid Level Gauge for practically every application – including Float, Pressure Bulb, Pressure, and Bubbler type Gauges and Controllers. Our field engineers will gladly study your problem and make recommendations.

Write for complete information on the instrument that will fully meet your requirements. The Bristol Company, 142 Bristol Road, Waterbury 20, Conn. 5.15



PRESSURE-TYPE GAUGES for measurement and control of levels in open vessels can be adapted to any type of mounting.

FLOAT-TYPE GAUGES are designed to measure levels of large bodies of water such as supply reservoirs or lakes.



BUBBLER-TYPE GAUGES measure levels of corrosive and solid-carrying liquids like those in pulp mills or sewage plants.

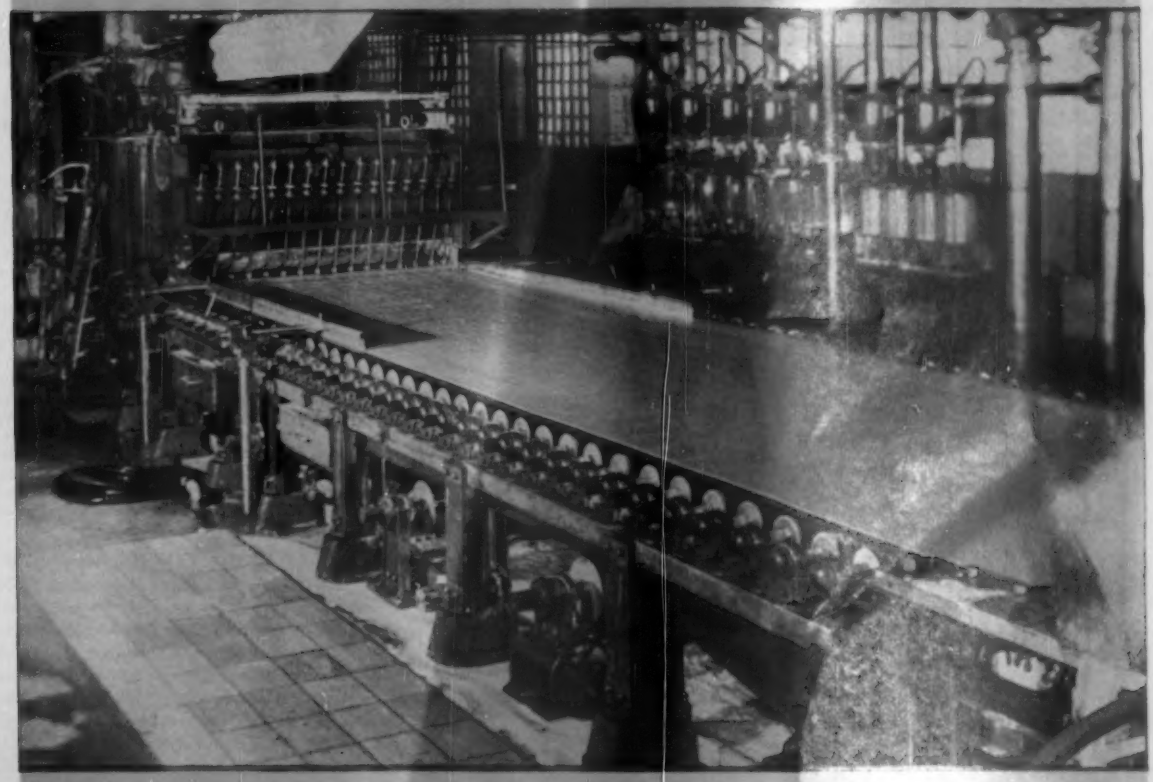
BRISTOL POINTS THE WAY IN *HUMAN-ENGINEERED INSTRUMENTATION*

BRISTOL'S

AUTOMATIC CONTROLLING, RECORDING AND TELEMETERING INSTRUMENTS

For a New Machine or Rebuilding an Old One

Puseyjones — leaders in the design and manufacture of new, high-speed paper-making machinery — have maintained a century-old standard for rugged, performance-proved dependability. Machines like the one mentioned below — built long ago by Puseyjones — are still capable of being increased in speed to meet today's production demands.



THIS FOURDRINIER completely modernized for higher speeds and lower maintenance . . .

This Puseyjones machine at Howard Paper Mills, Inc., Urbana, Ohio, has been modernized from time to time to incorporate improvements in paper-making methods. The latest Puseyjones modernization was undertaken in 1954, when the fourdrinier was completely rebuilt, with only the couch and suction boxes unchanged. Since November 15, 1954, this rebuilt machine has been producing Howard Bond, Ledger, Mimeo and Writing at speeds up to 800 F.P.M.

Outstanding features of the 92" x 75' wire size fourdrinier include rubber-covered A.F. mounted table rolls; large diameter brass wire rolls equipped with doctors; and heavy-duty shake rails with dual shaking units. Maximum forming area is achieved by placing the wire guide on the return. Savealls and covered shake rails are of stainless steel. An Evans "Rotabelt" is next to the suction couch.

When your production needs require either a modernization or a completely new machine, call in your Puseyjones engineer. He'll welcome the opportunity to work with you in solving your problems.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

THE PUSEY AND JONES CORPORATION

Established 1848 : : Builders of Paper-Making Machinery

Fabricators and Welders of all classes of Steel and Alloy Products

Wilmington 99, Delaware, U.S.A.

STRICTLY PERSONAL

MIDDLE WEST NEWS

Dr. R. A. Diehm Resigns; Ed Boyle Supt. at Waldorf

DR. R. A. DIEHM has resigned as executive vice pres. and general manager of Ward Paper Co., Merrill, Wis. He had not decided on future plans as this issue went to press.

ALVIN H. SINCLAIR is new assistant director, Paper Chemicals Application Laboratory, American Cyanamid's Midwest regional offices, 3505 North Kimball, Chicago. JAMES R. WELLMAN is director of the laboratory. GEORGE E. FROMM is western regional manager for the Paper Chemicals Dept. Mr. Sinclair's father, veteran Cyanamid wax size specialist, lives in Kalamazoo where young Sinclair attended Western Michigan College; later Univ. of Michigan. He was former assistant supt., Tyrone, Pa., mill, West Virginia Pulp & Paper.

TRONA®
SALT CAKE
FOR
QUALITY KRAFT
PRODUCTION
TRONA, long the largest basic source of natural sodium sulphate (Na_2SO_4) continues to produce highest purity uniform grade Salt Cake, to keep pace with the expanding kraft paper industry. You can be sure, when you specify TRONA, of an *adequate* and *dependable* source of supply for this essential ingredient in quality kraft production.
American Potash & Chemical Corporation
TRONA
INDUSTRIAL AND AGRICULTURAL CHEMICALS
Offices • 3030 West Sixth Street, Los Angeles 54, California
99 Park Ave., New York 16, New York
Plants • Trona and Los Angeles, California

These Men Head Production At Wisconsin Rapids Mills

HOWARD B. RICHMOND (left), veteran Prod. Mgr. of Consolidated Water Power & Paper Co.'s Wisconsin Rapids Division, announces appointment of GEORGE W. MEAD II (right), as new Asst. Prod. Mgr. These operations include 3 machines at "The Rapids" and 4 at Biron, totaling about 650 tons a day, plus sulfite, semi-chemical and groundwood pulp. Mr. Richmond's grandfather built the first mill in Wisconsin in Appleton in the 1880's on site of Consolidated's present sulfite pulp mill there. His new assistant is a graduate of Yale in chemistry, with a science master's from Institute of Paper Chemistry. He joined Consolidated in 1952 as "The Rapids" Division Sulfite Mill Chemist, later was Pulping Resarch Group Chief and, since Nov. 1954, Director of Product Development.

MISS CAROLA TRITTIN, technical director at Ward Paper Co., since 1950 and research chemist, 1947-50, has joined the paper technology faculty at Western Michigan College, Kalamazoo. Her first courses were special summer coating courses taken by many mill men. A native of Appleton, she graduated from Lawrence College in 1926, studied at the Institute and Northwestern U., and was with Appleton Coated Paper, Container Corp. and American Coating Mills.

KEN GEOGHEGAN, v. p. and tech. director, Howard Paper Mills, Dayton, O., is now in his 31st year with Howard, still seeing lots of U.S.A. in his travels. He is past president of TAPPI.

DONALD KNIGHT, Bulkley, Dunton Pulp Co., Kalamazoo, had a thrilling air journey to Ketchikan Pulp Co. Air liners must land on Annette Island, 20 miles from Ketchikan, and little amphibian shuttle planes deliver passengers back and forth. When Don was "going out" (he rode with the pilot) the little plane battled a 60-mile gale. When word was phoned back to the dock that the plane almost did a couple of fliperoos, a second flight with more passengers for the liner was cancelled.

MILTON and JOSEPHINE BAILEY (he's Bulkley, Dunton Pulp vice prexy) are back in Kalamazoo from another winter vacation in Tucson, an annual "must" now their married daughter lives down that-a-way.

Continued on page 14

OXYRIM® IS THE TRADEMARK OF THE A. O. SMITH CORPORATION for the remarkable new steel that gives longer life to sulphate digesters

INVESTIGATE NOW! Your A. O. Smith representative has complete and detailed information on these longer-life digesters. He'll be glad to counsel with you. Call or write the nearest district office listed at right, or write to A. O. Smith, Process Equipment Division, Milwaukee 1, Wisconsin.

Through research ... a better way

A.O.Smith

CORPORATION

PROCESS EQUIPMENT DIVISION

Milwaukee 1, Wisconsin

Chicago 4, Illinois · Houston 2, Texas

Los Angeles 22, California · New York 17, New York

Pittsburgh 19, Pennsylvania · Seattle, Washington

International Division: Milwaukee 1, Wis.

These Drops Tell the Story:

ACID, WATER, OR ALKALI...

THE PHOTOGRAPHS at right were taken under identical conditions — with one exception. In each case, drops of acid, water and alkali were placed simultaneously on the same grade of paper. But one sheet had been conventionally sized, the other Aquapel sized. That was the only difference — but what a difference:

The sheet conventionally sized has already begun to absorb the acid and alkali. Only the water has been repelled. But on the sheet sized with Aquapel, all three — acid, water and alkali — failed to penetrate. It's little wonder, therefore, that paper mills everywhere are investigating the "Aquapel Difference.". . . .

EASY TO APPLY—Aquapel may be applied with any equipment commonly used for surface treatment of paper, such as size tub, size press, calender box, or coating machine. Aquapel dispersions can also be applied by spray equipment such as shown here. We would be glad to tell you the advantages of this new method.

100-POUND DRUMS—Aquapel is available in convenient, easy-to-handle fiber drums containing 100 pounds net.

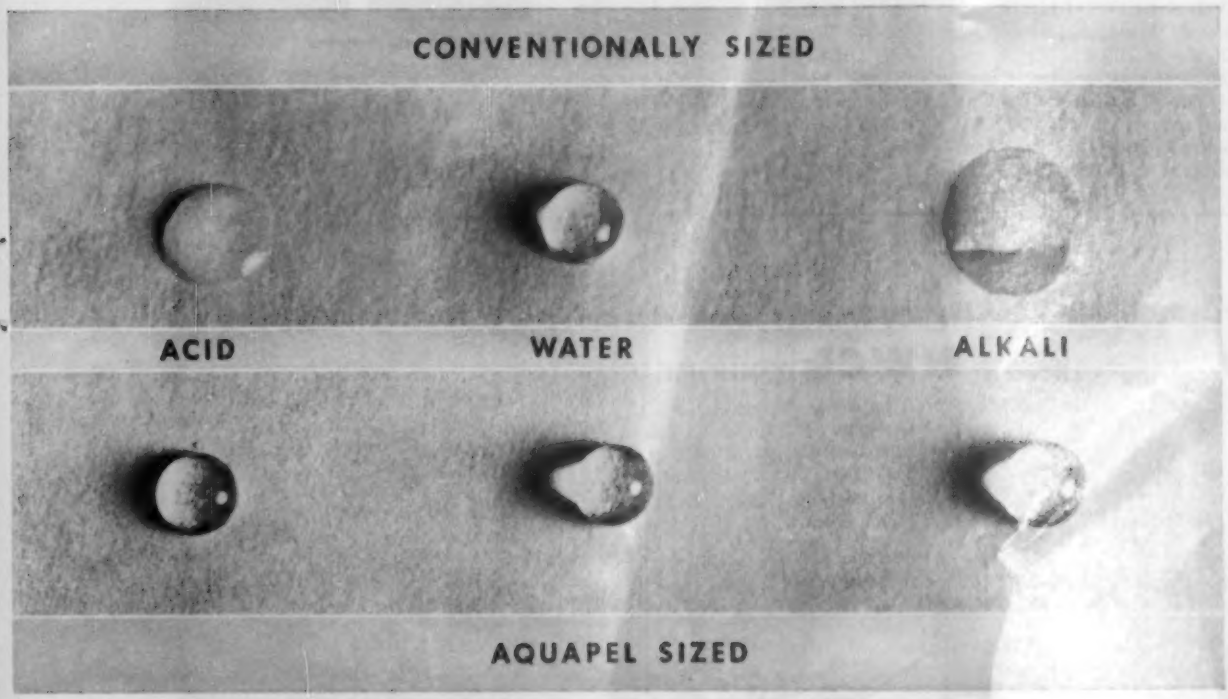
Paper Makers Chemical Department

HERCULES POWDER COMPANY

INCORPORATED

965 King St., Wilmington 99, Del.

IT'S ALL THE SAME TO AQUAPEL®



. . . . Aquapel is a different kind of sizing agent. It's not a resin, not a wax. Aquapel is an alkylketene dimer, a chemical compound that reacts with cellulose fibers to form a surface that is resistant to the penetration of cold water, hot water, acid, or alkali.

Aquapel is different because it becomes an integral part of the material treated. It is not held on solely by adhesion or other physical means.

Aquapel is different because while usually applied on the surface, it is not a surface size in the usual sense. It replaces rather than supplements beater sizing with rosin size and alum.

And Aquapel is economical to use—a little goes a long way.

Why not find out for yourself what a difference Aquapel can make. Write for technical data and a sample.

Paper Makers Chemical Department

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INCORPORATED

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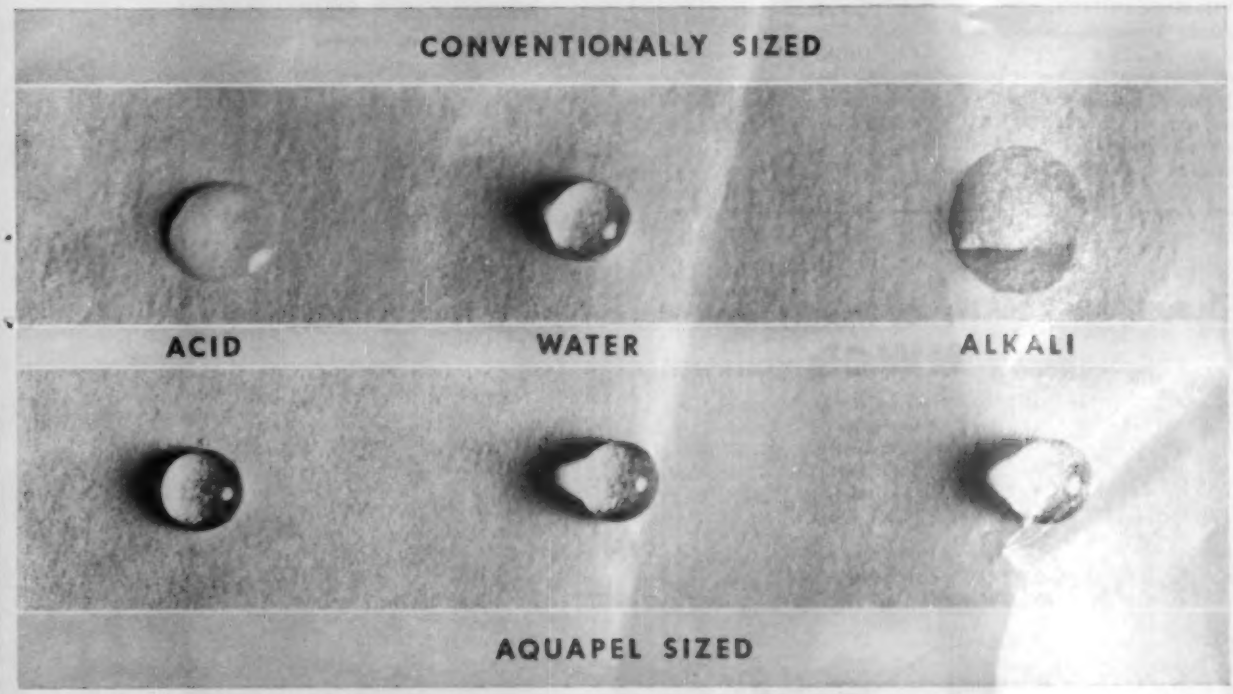

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Paper Makers Chemical Department

HERCULES POWDER COMPANY

INCORPORATED

965 King St., Wilmington 99, Del.

STRICTLY PERSONAL

MIDWEST NEWS

PHIL MOORE, representing General Electric's engineering dept., and JIM HANDLEY, G. E.'s service shop, have joined DAVID B. GEARHART, manager of the enlarged Michigan District for General Electric at 112 Parkway, Kalamazoo. Both new men serve the paper industry, Mr. Moore handling mill equipment service and Mr. Handley, repairs of equipment out of warranty but damaged or worn out in service.

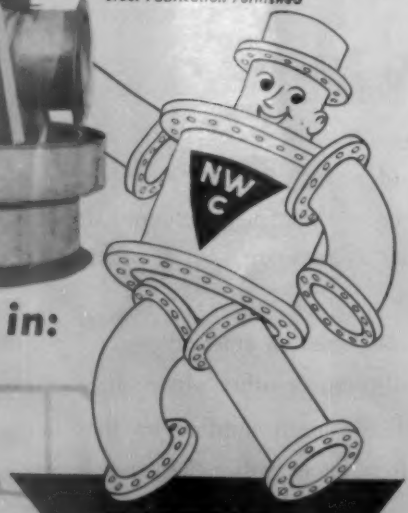
MAX BARDEEN, president, BYRON BISHOP, WILLOW COMSTOCK and A. A. HILL, other officers, Lee paper Co., were speakers at a 50-year anniversary banquet and dance of the Vicksburg, Mich., firm.

KENT DICKERMAN, son of GIL DICKERMAN, tech. director, Consolidated Water Power & Paper, is getting the "full treatment" with Bowater's in England, working in various depts. and mills. Now he is at Gravesend, Eng.

IF YOU WANT IT FABRICATED
NWC'S YOUR MAN

Northwest Copper Works is the pioneer fabricator of Stainless Steel for the Paper Industry... SERVICE is a by-word... FOLLOW-THROUGH is a Must ... GUARANTEED SATISFACTION means what it says.

Typical Illustration of Stainless Steel Fabrication Furnished



Specializing in:

Stainless Steel Products
Stainless Steel Tubing
Stainless Steel Valves
Stock Valves
Stainless Steel Fabrication
Stainless Steel Fittings
Stainless Steel Pipe
Copper Smithing
Lead Linings
Lead Burning

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MURDOCK 2191

Shand Assists Lawler

H. J. (JIM) LAWLER (left), Mgr. of Paper Chemicals Sales, Monsanto Chemical Co.'s Organic Chemical Division, has a new aide in St. Louis in LLOYD D. SHAND (right), who has taken over the new post of Asst. Mgr. of Paper Chemicals Sales. The move reflects expanding importance of Monsanto fortified rosin sizes to the paper industry, says JOHN L. HAMMER JR., Director of the Organic Division Marketing. Mr. Shand, born in Boston and graduate of Tufts, 1939, joined Monsanto that year. When paper chemicals sales headquarters and laboratory were moved to St. Louis in Jan. 1954, he moved to Cleveland, O. as Sales Rep. from Everett, Mass.

STANLEY HOYMAN is paper mill engineer at Marathon Corp., Menasha, Wis. He formerly was with BILL MITCHELL in Central States Engineering, Appleton.

HENRY ROTHSCHILD, first graduate chemical engineer with Kimberly-Clark, long time technical director and pioneer in applying chemistry to its processes, has retired after 42 years with K-C.

ROBERT H. LACE, tech. director, Riverside Paper Corp., Appleton, spoke on "Competitive Quality—Mountain or Mole Hill," at the American Society for Quality Control convention in New York.

ED F. BOYLE, former supt. at Federal Paper Board, Bogota, N. J., is new board mill supt. at Waldorf Paper Products Co., St. Paul, Minn.

ROBERT R. BUSS is at Parchment, Mich., at Hercules Powder Paper Chemicals Dept., as acting manager for sales, having transferred from Wilmington.

GORDON EBERT is new sorting foreman, BERNARD McCOLLISTER, cutters tour foreman, and HAROLD THATCHER, asst. chief inspector, finishing dept., Mead Corp., Chillicothe, according to E. B. MASON, division mgr.

J. J. BURNETT, former Chicago mgr., now heads all field sales for Foxboro. H. L. LEE is new regional mgr. for Foxboro in Cleveland, and J. J. CONNELLY succeeded Mr. Burnett in Chicago.

ALBERT LEHNERT is new maintenance control engineer, Nekoosa-Edwards. He was with Liquid Carbonate Corp., Chicago, graduated from U. of Wisconsin.

Continued on page 18

Exclusive **Nose Baffle**

Keeps B&W Recovery Units

ON THE LINE LONGER

Forced outages and down time are expensive in terms of both lost production and costs involved in getting recovery units back on the line. Keeping those costly, non-productive periods few and far between,—to clean and remove smelt deposits— is the job of the NOSE BAFFLE found *exclusively* in B&W Recovery Units.

PROBLEM—How to shield the ash deposits on the superheater from the radiant heat of the furnace, and direct the flow of high-temperature gas from the furnace so that all of the gas is cooled to the same degree before entering the superheater. The function of the Nose Baffle is to solve this problem.

RESULT—Through the use of the B&W Nose Baffle, ash deposits in zone where superheater tubes are closely spaced are soft, powdery and easily removed. The B&W Nose Baffle cuts frequent, difficult cleaning to the minimum and completely eliminates cleaning outages. Lower operating cost may be realized from lower temperatures, improved cleaning and continuous operation. The B&W Unit stays on the line longer.

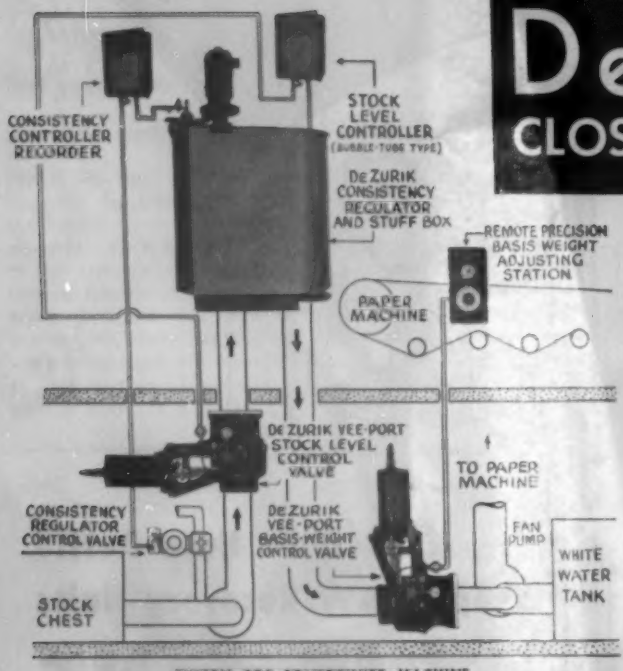
And high availability is one of the many benefits of a B&W Recovery Unit. For nearly 20 years B&W Recovery Units have demonstrated economical operation and high availability in leading pulp and paper mills. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

BABCOCK & WILCOX

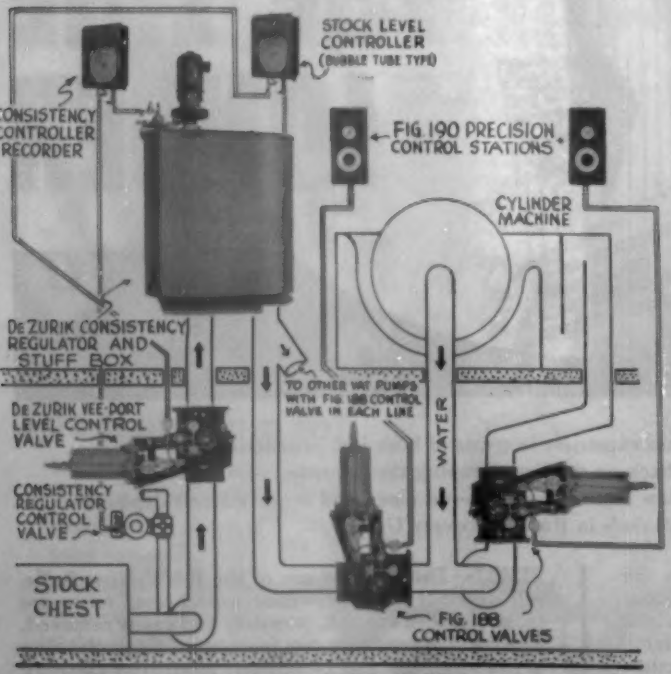
BOILER DIVISION

P-786

DeZURIK
CLOSED STOCK SYSTEMS



SYSTEM FOR FOURDRINIER MACHINE


STOCK LEVEL CONTROLLER (BUBBLE TUBE TYPE)
CONSISTENCY CONTROLLER RECORDER
FIG. 190 PRECISION CONTROL STATIONS
CYLINDER MACHINE
DeZURIK CONSISTENCY REGULATOR AND STUFF BOX
TO OTHER VAT PUMPS WITH FIG. 188 CONTROL VALVE IN EACH LINE
DeZURIK VEE-PORT LEVEL CONTROL VALVE
WATER
CONSISTENCY REGULATOR CONTROL VALVE
STOCK CHEST
FIG. 188 CONTROL VALVES

SYSTEM FOR CYLINDER MACHINE

FOR MODERN, EFFICIENT PAPER MACHINE STOCK SUPPLY

DeZurik Closed Stock Systems eliminate entrainment of air in the stock between the machine chest and the paper or board machine. The entire system—from the stock chest through the stuff box and down to the fan pump—is 100% full of stock. This removes five points of air pickup from the stock system at the most critical point . . . just before it reaches the paper machine.

The system includes a DeZurik Stuff Box Consistency Regulator with a DeZurik Vee-Port automatic level control valve in the supply line. Instead of the conventional stuff gate, another DeZurik Vee-Port Valve with a *driftless* hydraulic operator is installed in the stuff box discharge line near the fan pump. The valve is controlled from the front side of the paper machine where basis weight or caliper is changed by merely turning the calibrated vernier control knob. On cylinder machines a second control valve and control station are used at the fan pump discharge to permit changing the total volume to the vat. The same arrangement can be used on Fourdrinier jobs where remote setting of the flow to the machine screens is desired. In that case the adjustment can be manual or as an automatic level control for the headbox.

This DeZurik-engineered, low cost package installation provides these advantages:

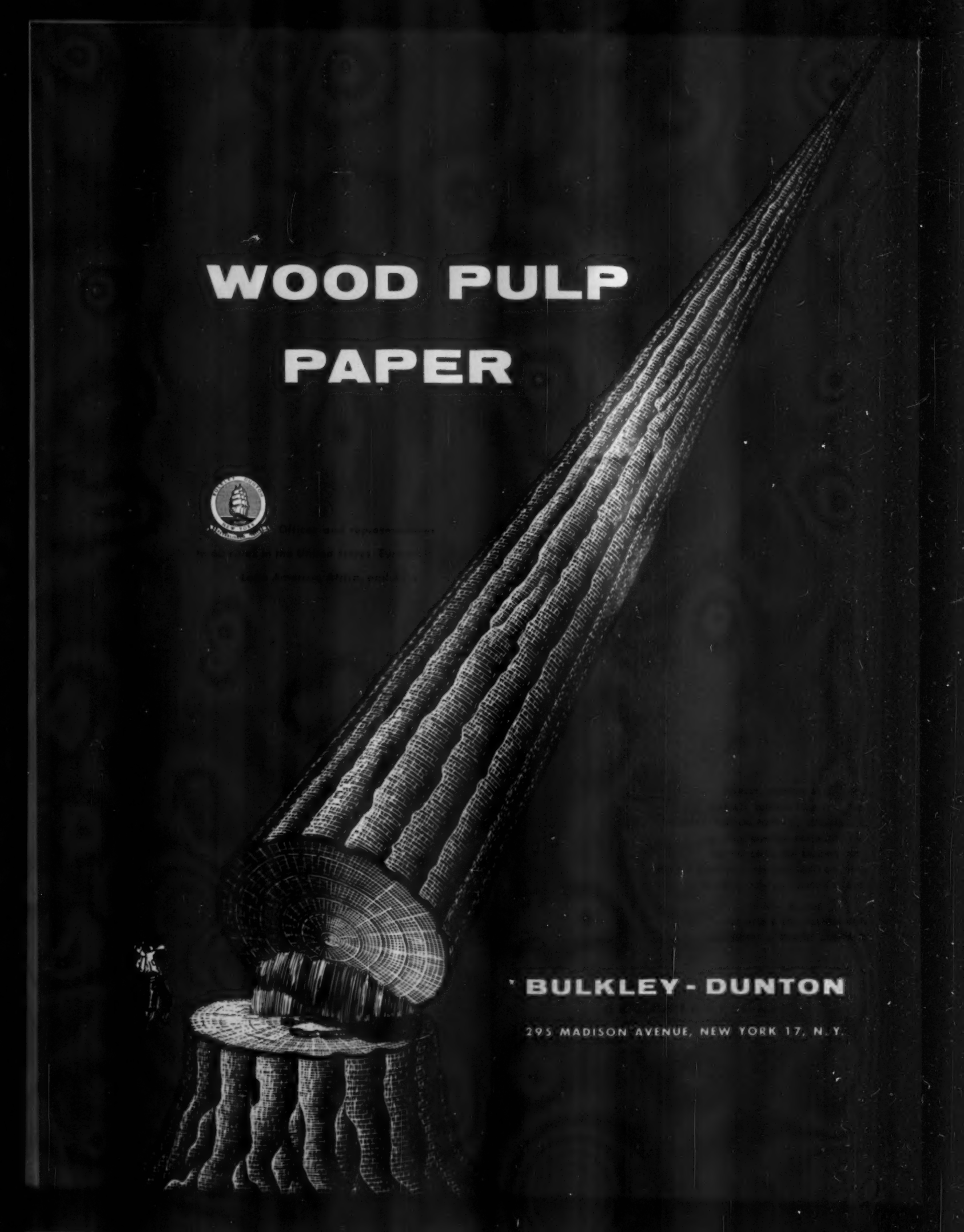
Eliminates all overflow of stock back to chest.
Stock is not refined twice.
Eliminates air entrainment, because system is full of stock.
Deflaker, if used between stuff box and fan pump, is always full of stock for uniform fibre treatment.
Machine tender can change rate of stock flow without leaving his station.
Gives improved sheet formation.
Permits higher machine operating speeds.

Because the basis weight control valve is installed at a much lower level in the system than a conventional stuff gate, any changes in stock level at the stuff box will have much less effect on the amount of stock delivered. The result is more uniform basis weight. The diamond-shaped orifice in the DeZurik Vee-Port Valve maintains stable flow at any setting. Only the size—not the shape—of the orifice changes with different settings.

Write for details.

DeZURIK SHOWER CO., Sartell, Minnesota

WOOD PULP
PAPER



BULKLEY - DUNTON

295 MADISON AVENUE, NEW YORK 17, N. Y.

PULP & PAPER — STRICTLY PERSONAL

SOUTHERN NEWS

Atlanta Mgr. for Foxboro; Southerners at Cleveland

JAMES R. GIRADEAU, supt., woodyard operations, Brunswick Pulp & Paper Co., Brunswick, Ga., recently received a mural-size photo of the Boy's Estate in Georgia (similar to Boys Town) for his general chairmanship activities which netted a record high in their fund campaign. His daughter, Eleanor, was recently elected freshman queen at Anderson College at Anderson, S. C.

J. DOUGLAS ROBERTSON, president of Mt. Hope Machinery, announces opening of a new service branch at 208 W. Griffith St., Charlotte, N. C., and **SLAUGHTER MACHINERY CO.**, Mt. Hopes's Southeast reps., will occupy space there.

Wire inspection (above) and seam inspection (below) are only two steps that guard the quality of Lindsay Fourdrinier wire cloth. Care, care and more care rules every move throughout our plant operation. The Lindsay Wire Weaving Company, Cleveland 10, Ohio.

LINDSAY WIRES Since 1904

FOR PAPER MANUFACTURING

In News from the South

HARLAN D. SHOPE (left), Waste Disposal Coordinator for all 9 Southern Kraft mills of International Paper Co., headquarters at Mobile, Ala., discussed new rain-making techniques to increase wood yields, control forest fires, in South, before Mobile-Pensacola Section of American Chemical Society.
HAROLD C. MACKLEM (right), member of famed paper industry family of engineers of Hamilton, O., is now an Engineer with J. E. Sirrine Co., Greenville, S. C., which has helped build many industry mills or plants. He was Asst. Plant Engineer at St. Regis mill in Pensacola, Fla. His father was for many years Sales Engineer with Black-Clawson and a brother is Sales Engineer there now.

E. W. PRENDERGAST is new regional manager for The Foxboro Co. in Atlanta; **E. L. STARK** continues as manager in Dallas and **L. W. PARTEN** in Houston.

Fellow workers at St. Regis, Jax, are wondering whether **JOHN McDERMOTT**, now supervisor of all St. Regis paper mills and still manager at "Jax," will duplicate his feat in 1955 of catching largest sailfish in 1954.

JAMES B. HURLEY, scheduling section, plant engineering, Champion Paper, Canton, N. C., succeeded **CARL T. WELTE**, asst. production mgr. of same mill, as president of Pigeon Valley Toastmasters' Club.

A. T. GARDNER, from Champion's Houston mill, **KENNETH KUIKEN**, Buckeye Cellulose, and **KEITH BRADWAY** of Camp Mfg. represented Southern industries at the Cleveland Coating Conference. Mr. Gardner, a Milwaukee native, has had wide experience as a coating specialist, at West Linn, Ore., Provincial in Canada, and in Wisconsin.

JOHN McCLURE has joined the production development dept., West Virginia P & P, Charleston, S. C. He formerly was with Potlatch Forests, Inc.

RICHARD W. O'DONNELL is chemist for Halifax Paper, Roanoke Rapids, N. C. He went there from St. Regis.

W. O. KINCANNON JR. has joined the New Orleans staff of Hercules Powder Co., as tech. service engineer. He was at Wilmington, Del., headquarters.

Continued on page 22

antara

Progressive paper makers depend upon Antara for their chemical needs because they are assured of quick, dependable deliveries of quality products. Antara's technical representatives are always available to help with application problems.

Why not try Antara's chemicals for the following:

Aniline Printing	TANNIN USP
Brightening	BLANCOPHOR HS
Calender Coloring	EMULPHOR EL-719, SAVANOL A
Defoaming	NULLAFOAM S
Dissolving Pulp Purification	IGEPAL CO-630
Felt Washing	IGEPALS, IGEPONS
Paper Rewetting	IGEPALS, NEKALS
Pitch Dispersing	BLANCOLS

CONTROL SLIME with

MERSYNATE
GALLICIDE
PURATIZED PREVENTOL

Send today for technical literature and samples of these time-tested quality paper chemicals

From Research to Reality

ANTARA CHEMICALS

A SALES DIVISION OF GENERAL ANILINE & FILM CORPORATION

435 HUDSON STREET • NEW YORK 14, NEW YORK

SALES OFFICES: New York • Boston • Providence • Philadelphia • Charlotte • Chattanooga • Chicago
Portland, Ore. • San Francisco • Los Angeles • IN CANADA: Chemical Developments of Canada, Ltd., Montreal

American
(DISC TYPE)

Combines Large Filter Area and High Capacity with Floor Space Saving

For certain types of slow stock such as: book papers, highly refined pulps for specialties, carbon papers, glassine, and light kraft, large saveall areas may be required.

The American Disc Type Saveall Manufactured by Dorr-Oliver provides the large filtering area required while requiring *much less* floor space than comparable drum type units.

Two sizes are available — 9 ft. diameter with maximum of 12 discs having 1200 sq. ft. area requires only 23 ft. x 12 ft. floor space. 7 ft. diameter with maximum of 8 discs and 560 sq. ft. of area requires only 8½ ft. x 15½ ft.

Important operating advantages include — easy, quick replacement of disc sectors. Thus, by keeping a few extra sectors as spares, down-time for periodic replacement of facing wire can be eliminated. By avoiding interruption of operation, problems of change over from white water to fresh water of different temperatures on the paper machine showers is prevented.

Hundreds of American Savealls are operating dependably in leading paper mills.

If you'd like more information on American Disc Type Savealls write for Bulletin 701-R — Dorr-Oliver Incorporated, Stamford, Conn. In Canada, 26 St. Clair Ave., East Toronto 5.

Sluicing jets cut under the sheets and peel or slice them off. The fine fibers and costly fillers are then returned to the stock chest with the sheet.

Illustrated is an American Disc Type Saveall installation at Scott Paper Company Mill in Chester, Pa. The 9 ft., 12 disc machine handles white water from their "Flying Scott", No. 7 machine. It is handling white water and sweetner as feed to the American Saveall, and the effluent filtrate contains only ½ pounds of fiber per 1000 gallons which is of a quality sufficiently high to permit it to be used as shower water.

STRICTLY PERSONAL

CANADIAN NEWS

Schmon Is Trib Director; Irwin with B. C. of Canada

ARTHUR A. SCHMON, chairman of the Canadian P & P Assn., has been elected a new director of both the Chicago Tribune and New York Daily News publishing companies. He also was elected president of the Quebec and Ontario Transportation Co., succeeding COL. ROBERT R. McCORMACK, Tribune publisher who died Apr. 1. Capt. Schmon, who served in France under Col. McCormick in WW I, continues as president of both Ontario Paper and Quebec North Shore Paper Cos.

WILLIAM V. (BILL) IRWIN has been appointed chief engineer of Black-Clawson (Canada) Ltd., announces E. M. ROOT, vice president and general mgr., of the subsidiary in Montreal. A native of Ottawa, Mr. Irwin was formerly with Alxander Fleck, Ltd.

J. E. VALLILEE has been appointed executive vice president of Ontario Paper Co. Other Ontario Paper vice presidents and directors and their divisions, were named as follows: J. B. JONES, manufacturing; H. A. SEWELL, woodlands; K. F. McGRANN, sales; T. F. FLAHIFF, legal affairs and public relations; M. H. JONES, engineering, and E. B. GRALOW, new developments.

ROY MORRISON, formerly of Brown Corp., La Tuque, Que., and Pacific Mills, Ocean Falls, B.C., now a Rhodes scholar at Oxford, has been awarded another scholarship enabling him to remain another year. His father is TOM MORRISON, St. Maurice Power Corp. at La Tuque.

JACQUES BOLLAND is the new manager of sales promotion for Rolland Paper Co.

NORMAN WALTON, former industrial engineer at Powell River Co., Powell River, B.C., has been named engineering assistant to chief engineer HAROLD MOOREHEAD. S. A. COLLICUTT succeeds Mr. Walton. VICTOR POOLE was elevated to control supervisor and J. G. D'AOUST, senior project engineer.

Seip Hangs Out Shingle; Baker Leads Britons to U.S.

RUSSELL G. SEIP (left), veteran Chief Eng. of kraft pulp and paper operations of St. Regis at Pensacola, Fla., and previously of Florida Pulp & Paper and Alabama P & P operations at the same site, has retired to establish his own business as pulp and paper Consulting Engineer in New York City and in Pensacola.

ARTHUR BAKER (right, Chief Tech. Advisor, Bowaters Paper Corp., London, and founder of the British Paper & Board Makers' Association's Technical Section, was Stadler Memorial Lecturer at the annual summer meeting of the Canadian Technical Section in early June at Quebec City. He led a delegation of 40 technicians from Britain, some planning tours of U. S. and Canadian mills later.

J. "CY" WOOD, formerly in Montreal with Sherbrooke Machineries, Ltd., is now representing the company with offices in Vancouver, B.C.

SELF-DOCTORING TOPRESS ROLLS rubber covered by GRIFFITH of Portland

THE MOST ADVANCED DEVELOPMENT IN RESILIENT ROLL COVERINGS SINCE THE INTRODUCTION OF RUBBER COVERED SUCTION ROLLS

The Self-Doctoring Topress rolls covered by GRIFFITH will not pick the sheet because a special improved rubber cover compound is used. Breaks in the sheet contacting the Topress Rolls are eliminated. Doctor Blades may be entirely removed from the machine—or their use discontinued.

With the installation of GRIFFITH Self-Doctoring Topress Rolls on an open top press, you gain the advantage of resilient rolls of the hardness required for best operation. This gives better water removal at higher speeds, plus much longer felt life.

Write, Wire or Telephone for Estimate on Your Job

Griffith RUBBER MILLS

SECOND & THIRD PRESSES—GRIFFITH covered Self-Doctoring Topress Rolls with Doctor Blades and Holders permanently removed from machine.

FIRST PRESS—GRIFFITH covered Self-Doctoring Topress Roll with Doctor Blade off the roll.

Three GRIFFITH covered S.D.T. Rolls are used on Weyerhaeuser Timber Company's 400-ton-per-day machine at Springfield, Oregon, running at 1,200 ft. per minute.

2439 N. W. 22nd Ave. • Phone: BEacon 7126 • Portland, Ore.

Western Industrial Rubber Specialists Since 1911

EMERSON SHOWER PIPES
make every drop work

Whether it's processed or fresh water, Emerson Shower Pipes provide maximum flow with minimum consumption. The reason a combination of features exclusive with Emerson, coordinated by Emerson engineering skills to give efficient, trouble-free, low-cost performance.

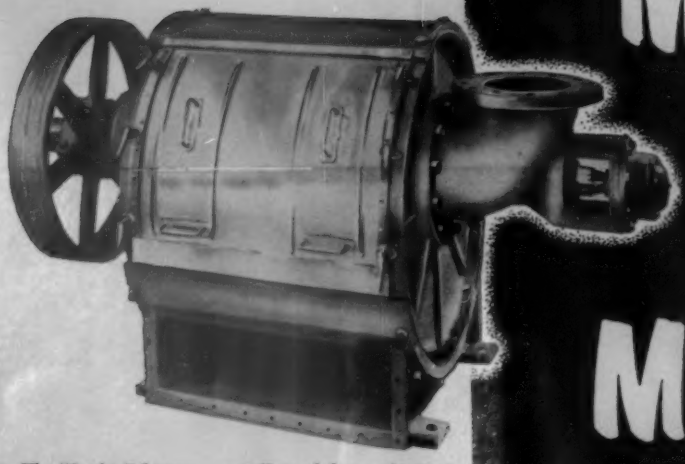
- **Fool-proof handle** with quick position settings.
- **Fixed centralizers** mount pipe rigidly in center of pipe.
- **Nozzles** set at 5 degree angle to give complete spray coverage and equal pressure where you want it with no interference from adjacent.
- **Durable stainless steel** wire brush guided by center slot in nozzle to free foreign matter from nozzle orifice.

- **Various-sized nozzle orifices** for most efficient adaptability.
- **Nozzles available in three metals** — stainless steel for acid or ordinary conditions; nitralloy for abrasive conditions; carbide for extreme conditions.
- **Flush valve** designed to open automatically for pipe flushing when brush is in nozzle orifice; to close after cleaner-brush frees nozzle orifice for spraying.

EMERSON SHOWER PIPES are custom-made to fit your exact requirements in 1½", 2", 2½", 3" and 4" sizes. Factory-tested before shipment, they are recommended for use on Fourdrinier wires, felts, cylinder molds, rotary screens, thickeners, washers, grinding stones and machines, for foam killing and humidifying and for any special application you may have.

Send for bulletin on ***Emerson Shower Pipes*** *for detailed information.*

The Emerson Manufacturing Co.
Division of John W. BOLTON & Sons, Inc.
Lawrence, Massachusetts, U.S.A.



The "Junior" Screen . . . smallest of *three* units producing from 35 to 150 tons per day, respectively.

Money Saving Midgets

Cowan Centrifugal Pulp Screens by

APPLETON MACHINE COMPANY

Added efficiency, greater economy are the watchwords for *Appleton Machine Company's* junior versions of the standard Mark "A" Cowan Centrifugal Pulp Screen, acknowledged as outstanding in its field.

The Mark "E" Screen is a half-sized model of the standard Mark "A", conservatively rated at a capacity of 2400 U.S.G.P.M. accepted stock. 50 h.p. is required to operate the Mark "E", but its drive is designed to accommodate a 60 h.p. motor, wherever needed. The Mark "E" is particularly advantageous in smaller mills, or as a supplementary screening unit. Also, installing two Mark "E" Screens—instead of a single larger machine—provides a definite safety factor in case of breakdown.

The "Junior" Screen is a quarter-sized model of the big Mark "A", with a rated capacity of 1400 U.S.G.P.M. accepted stock. 25 h.p. operates the "Junior" Screen, but it will handle motors up to 40 h.p. Greatest applications are as secondary screening units, and as a primary screen for mills producing a variety of pulp grades which require a system made up of small, separate units.

Performance of these two Cowan Screens is comparable in every way to that of the standard Mark "A" Screen . . . the same high consistency screening . . . low percent rejects . . . good fiber separation . . . low shower dilution pressure . . . top hydraulic efficiency. Typically sound *Appleton Machine* construction plus a protective coating tailored to fit your needs *complete* your assurance of long-time satisfaction.

CUSTOM-BUILDERS OF PULP & PAPER MILL MACHINES
WINDERS • FINISHING ROLLS • REWINDERS

PUGET PULP—the *whitest, cleanest, bleached sulphite pulp* that we can make is produced *particularly for the market.* To assure converting mills of top quality, Puget management is always testing new processes, always alert to improved methods, always ready to install new designs in equipment. *Gear your operations to* **PUGET PULP.**

PUGET SOUND

PULP AND TIMBER COMPANY

BELLINGHAM • WASHINGTON

PULP & PAPER

STRICTLY PERSONAL

PACIFIC COAST NEWS

Forman Heads "Week"; LeRouxs on Tour

CLAUDE MAULDING, tour boss, Crown Z's Port Townsend, Wash., kraft mill, recently completed 35 years service and was awarded a pin by Vice Pres. E. P. STAMM. Mr. Maulding joined CZ at Ocean Falls, B. C.

LOREN FORMAN, tech. director, Scott Paper, general chairmanned Chemical Progress Wek at Everett, Wash., with assistance from LEO BURDON, Scott asst. v. p., DON McCALL, v. p. & gen. mgr. of Simpson Paper (formerly Everett P&P) and others.

O. W. FROST is new general mgr. of Oregon Fibre Products, Pilot Rock, Ore. He had held same title at Forest Fibre Products, Forest Grove, Ore. O. B. EUSTIS continues as plant mgr. at Oregon Fibre.

Run Paper Mill at Tacoma

SYDNEY T. DOLAN (left), new Paper Mill Supt. at St. Regis, Tacoma, Wash., now has as his new Asst. Paper Mill Supt., ALDEN SATER (right). Mr. Sater was on Tacoma staff since paper mill started up in 1948. Raised in Camas, he joined Columbia River Mills in 1933. He served with Army Engineers in Guam, Okinawa and Aleutians in WWII. He and wife, Helen, live at The Palisades, East Ta-

PETE SINCLAIR, v. p. for industrial and public relations, and LEO ZIEL, C-Z Port Townsend mgr., accompanied AL LAYTON, research v.p. and trustee of the Paper Institute, to Execs Conference in Appleton.

F. M. HUGHES, hardboard service mgr., Forest Fibre Products Co., Forest Grove, Ore., has been promoted to mgr. of production and sales.

RAY DICKEY, office mgr., wrapping, industrial and converted paper sales, has been with C-Z over 40 years.

N. S. LEA, Scott Paper, Everett, heads TAPPI's national acid pulping committee. A new project will be on sulfite spent liquor. The committee also has sent a quiz to all mills on high yield acid pulping.

PAUL HENRY, Crown Z, West Linn, is taking a 3-week summer course on coating at Western Michigan.

GERALD E. YOUNG, v. p. of newsprint, coated book and printing sales; ELMER HUGHES, mgr. of production planning, San Francisco; and three West Linn men —KENNETH REINER, supervisor, engineering dept., ROBERT L. WEST, paymaster, and Arthur R. Lindsley, filter plant supt., have passed the 30 yr. mark with C-Z.

VELDON ANDERSON, mill manager of Fir-Tex Insulating Board Co., St. Helens, Ore., was named to the board of directors, succeeding STANLEY MOORE.

DAN KEATING, formerly active in pulp and paper chemical sales out of Portland, Ore., is now manager of the Agricultural Chemicals Division, Stauffer Chemical Co., New York City.

New Posts on West Coast

VINCE MALIN (left), new Mechanical Engineer at West Tacoma Newsprint Co., Steilacoom, Wash., under Plant Eng. Art Greaves. Mr. Malin was formerly with Herman Simpson consulting engineer, Seattle, and Lamb Grays Harbor Co. HARALD ROGGE (right) new Pac. Northwest Sales Engineer for Earl Paint Corp., maker of Erkote Mastics. He is located at 5704 East 60th, Seattle, 5. He was with Lamb Grays Harbor Co. 7 years as Production Mgr. and Project Engineer on new development, and lately has operated his own business as mfrs. representative. Erkote Mastics were originally formulated for the pulp and paper industry.

LAUREN R. GIERSCH, C-Z tissue mill technician, is president of Camas Junior Chamber of Commerce. A. B. LAYTON, vice president, recently became a director of Legal Aid Society, San Francisco. Mrs.

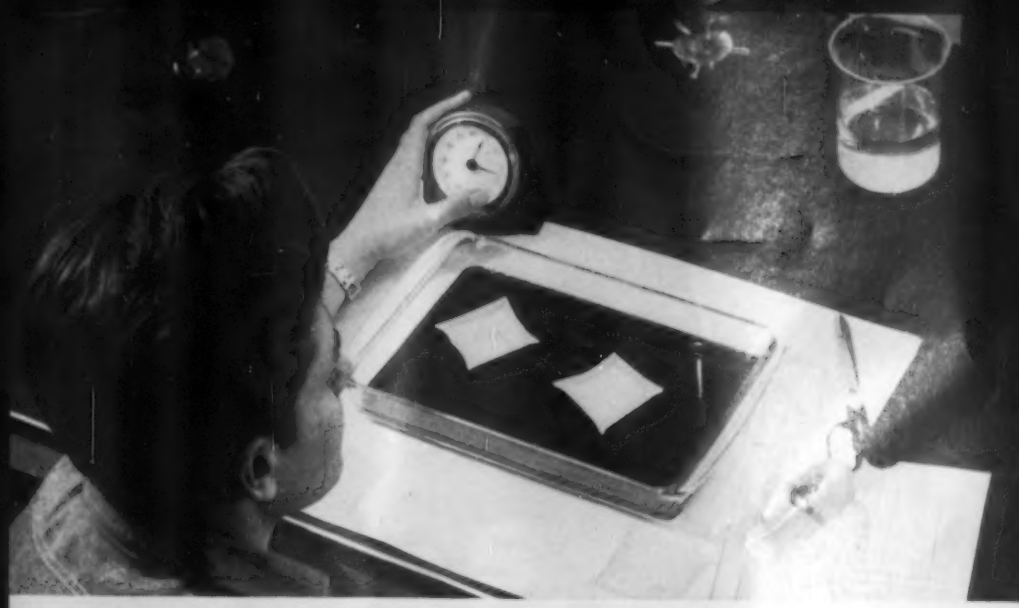
VERA BERNEY, women's personnel supervisor, Camas, is secretary and a director, Vancouver area board of Washington Children's Home Society. A. NEIL

FRANKLIN, C-Z personnel and safety supervisor, is vice president of newly formed Junior Chamber of Commerce at Port Townsend, Wash. R. D. DICKEY, resident manager of Seattle office, is a new director of Assn. of Washington Industries.

WILLIAM MURPHY, district sales representative, Western Waxed Paper Co., Seattle, for the past 15 years, has been granted a leave of absence. JOHN DAVIE, district sales representative in Salt Lake City has been shifted to Seattle in Mr. Murphy's place.

AT BYRON WESTON

efficiency goes up with Mersize RM Dry



WITH INK FLOTATION TEST, a Byron Weston Paper Co. technician checks production samples of 100% rag paper for ink resistance and feathering. Mersize RM Dry's consistent high sizing meets Byron Weston's critical standards.

It takes uniform, quality sizing to keep a tight rein on the variables that arise in high-grade rag paper production. That's why Byron Weston Paper Company, of Dalton, Mass., relies on Monsanto paper chemicals.

When Mersize RM Dry was introduced by Monsanto last year, Byron Weston discovered that its high sizing stability brought great efficiency to production by reducing quality control fluctuations.

Byron Weston's technical staff says: "In making our 100% rag Weston Linen Record, we need insurance to control the variables. Mersize RM Dry's consistent sizing performance helps to narrow the margins of error and smooth out the extremes."

IF YOU USE DRY SIZE, it will pay you to check these other Mersize RM Dry advantages:

LOW DUSTING—Beater room men like to work with low-dusting Mersize RM Dry because it improves working conditions. Mersize RM Dry is non-irritating, easy to handle.

LIGHT COLOR—Mersize RM Dry's very light color resists darkening with age... produces high-brightness paper comparable to the lightest rosin size.

LOW FOAM—Mersize RM Dry's low foam index helps eliminate countless production problems.

For full information on how Mersize RM Dry can improve the efficiency of your mill operation, write Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Box 478-K-5, St. Louis 1, Missouri.

Check List of Monsanto's Complete Family of Fortified Sizes:

Mersize RM Dry
Complete fortified dry size
Mersize CO-2 Concentrate, for use with rosin size
Mersize CO-2 Dry
Concentrate in dry form
Mersize RM 70%
Complete fortified paste size
Mersize RM 77%
Complete fortified paste size

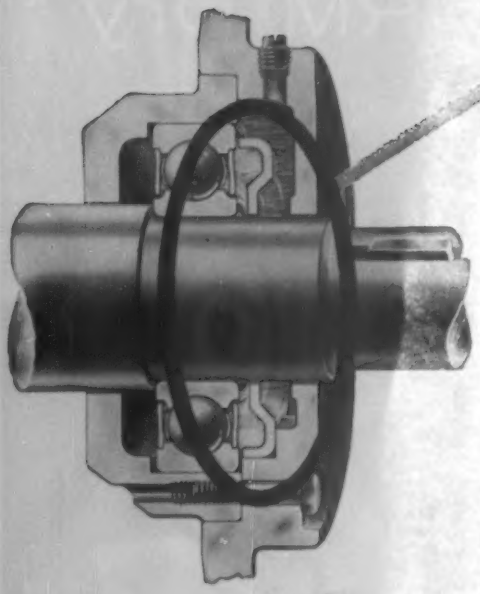
Mersize: Reg. U. S. Pat. Off.

MONSANTO
CHEMICALS – PLASTICS

SERVING INDUSTRY ... WHICH SERVES MANKIND

RELIANCE METERMATIC

You can't grease 'em wrong!



NEW METERING PLATE

provides the right amount of lubrication for A-c. and D-c. motors

No over or under lubrication is possible . . . you *can't* grease 'em wrong!

This is your sure answer to reliable greasing to eliminate burned-out motors.

Grease is *metered* to the bearing in just the *right amount* at all times.

Get in touch with the Reliance sales office or distributor near you for more details.

A-1402

RELIANCE
TOTALLY PROTECTED
A-C. MOTOR

RELIANCE Super Line

RELIANCE ELECTRIC AND ENGINEERING CO.

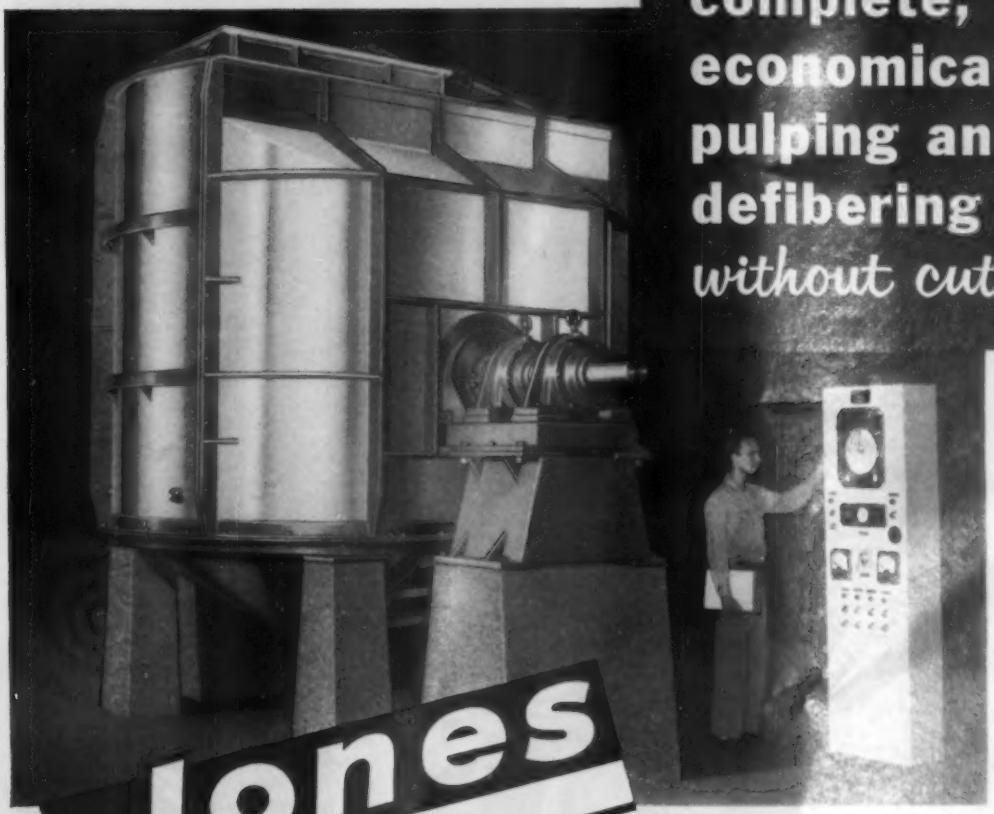
1053 IVANHOE ROAD • CLEVELAND 10, OHIO

Canadian Division: Welland, Ontario

Builders of the Tools of Automation

RELIANCE Precision-Built MOTORS

now... fast, complete, economical pulping and defibering *without cutting*



Jones HI-LO PULPER

33% SAVING IN TIME

25% SAVING IN HP/TON

No longer is it necessary to accept compromise in your pulping — compromise between adequate speed and economical use of power, between maximum circulation and efficient, complete defibering.

The new Jones HI-LO Pulper is designed and engineered and *proven* able to produce maximum pulping *and* complete defibering—without cutting, without exhorbitant use of power. In actual production it has shown savings of 25% in HP/TON, 33% in pulping time.

Ask your Jones representative for details or write for Bulletin No. EDJ-1063.

Unique feature of the Hi-Lo Pulper: two separate rotors: large-vaned Lo-speed for breakup and circulation; small-vaned Hi-speed for complete defibering.

Jones

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

ECONOMY-SIZE PACKAGE. Chartered barge, one of a fleet used in Hooker West Coast service, carries 11 cars of liquid chlorine and other chemicals on deck. Below deck are carried, 1,000 tons of caustic soda. The barge is seen here in Elliott Bay off Seattle, en route to a pulp mill in British Columbia.

Could chemicals-by-barge save you $72,000 a year?

Tests may show that there's little brand difference in some of the heavy chemicals you buy. But there can be a real dollars-and-cents difference.

Often, *how you get them* makes that difference.

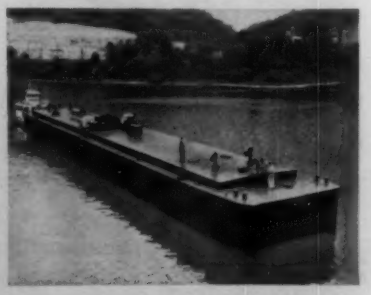
For example, a large midwestern processor had been buying 50% liquid caustic soda by tank car. At our recommendation this company decided to receive caustic by barge. The result: a $72,000-a-year saving.

If you can take caustic soda by water, why not look into barge delivery? All Hooker plants and caustic terminals, are located on deep water. There's a good chance that delivery by barge, specially chartered or Hooker-operated, can pile up real savings for you.

Call the nearest Hooker sales office or write us for more information on the dollars-and-cents difference the right method and volume of delivery can make for you.

SALES OFFICES:

NEW YORK	MUrray Hill 2-2500
CHICAGO	CEntral 6-1311
NIAGARA FALLS	6655
TACOMA	BRoadway 1215
LOS ANGELES	TErminal 4-2411
	or NEvada 6-3826



MIDWEST CUSTOMERS near Great Lakes get rapid service from Montague, Mich., or from Chicago. Two men can unload a 300-ton shipment of caustic soda from this specially-built Hooker barge in one fast, smooth operation.

HOOKER CHEMICALS

1905—Half a Century of Chemicals
From the Salt of the Earth—1955

HOOKER ELECTROCHEMICAL COMPANY

2 UNION STREET, NIAGARA FALLS, N. Y.

NIAGARA FALLS • TACOMA • MONTAGUE, MICH. • NEW YORK • CHICAGO • LOS ANGELES

MEAD
pulp

MEAD PULP SALES, INC. • **Distributors of Wood Pulp**

BLEACHED AND UNBLEACHED CHEMICAL AND MECHANICAL WOOD PULP

118 West First Street, Dayton 2 • 230 Park Avenue, New York 17 • 20 North Wacker Drive, Chicago 6

Paul Bunyan created the Petrified Forest in Arizona as a firebreak simply by burying all the trees in a 25,000-acre tract under wet sand.

This is the eighty-third incident from the fabulous life of Paul Bunyan. Reproductions are available on request.

It's in the Bag!

Fresh, Clean Ink for a Year of Trouble-free Recording

★ You won't have any messy, time-consuming re-inking of pens on the new Bailey Recorders. The entire system is white-glove clean—hermetically sealed, non-evaporating, non-corrosive. Gone is any chance of sludge or oxide formation. Gone are clogged pens, interrupted records, unsightly splashes.

The transparent plastic ink sacs are changed once a year—that's all. Capillary tubing carries fresh, clean ink to the pens continuously without any day-to-day attention.

This exclusive new inking system* is only one of the many time-saving, money-saving distinctive features of the new Bailey Recorder.

Ask for Product Specification E12-5.

*Now available for the New Bailey Recorder only.

ONLY BAILEY OFFERS ALL THESE ADVANTAGES IN A SINGLE RECORDER

- Pre-calibrated plug-in receiver units
- Up to four pneumatic or electronic receivers —or two receivers and two integrators
- Any four variables on one chart—easily read and interpreted
- A full year's ink supply at one loading
- Faster ordering—from stock
- Minimum inventory of parts
- Minimum instrument investment for process cycle expansion or alteration

BAILEY METER COMPANY

1037 IVANHOE ROAD

CLEVELAND 10, OHIO

Controls for Power and Process

Controls for
TEMPERATURE
PRESSURE
GAS ANALYSIS
FLOW LEVEL
RATIO DENSITY

TORKEL KORLING

GEARED FOR ACTION ... *Conference at Beloit Iron Works.* / *For further details, please turn the page.*

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BAILEY METER COMPANY

1037 IVANHOE ROAD

CLEVELAND 10, OHIO

Controls for Power and Process

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TEMPERATURE
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RATIO DENSITY

TORKEL KORLING

GEARED FOR ACTION... *Conference at Beloit Iron Works.* / *For further details, please turn the page.*

GEARED FOR ACTION

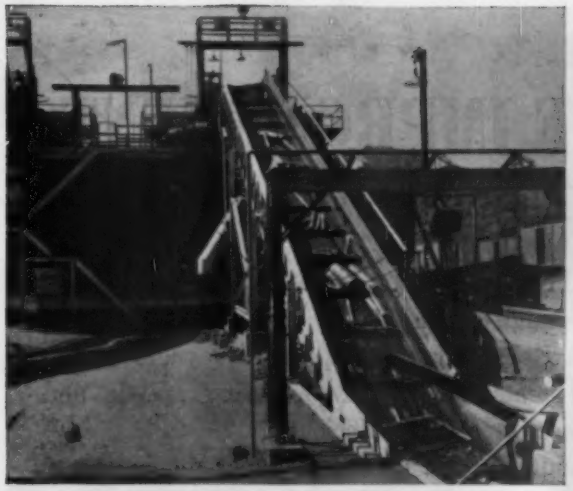
In the photograph on the preceding page, Tom McKie, Staff Engineer, and Larry Ward, Lubrication Engineer, are shown discussing a Beloit Differential Drive Unit. The differential drive mechanically locks the sections of the machine together for positive control of draws. A single prime mover powers the gear units through a lineshaft on the machine floor, leaving the basement clear. Installations running since 1951 have materially improved sheet characteristics and reduced breaks.

your partner in papermaking **BELOIT**

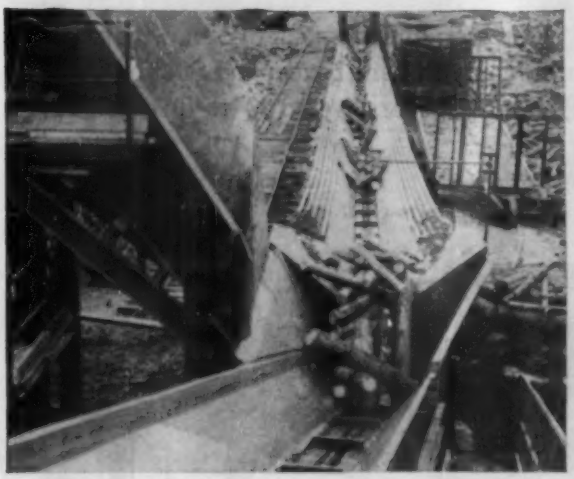
PAPER MACHINERY

BELOIT IRON WORKS · PAPER MACHINERY · BELOIT, WIS., U.S.A. ·

WHEN YOU BUY BELOIT...YOU BUY MORE THAN A MACHINE



Two strands of rugged Rex A-111 Durobar Combination Chain with steel angle flights provide the power to elevate pulpwood from flume to barking drums.



Rex Mill Refuse and Log Chain No. 8118 with flight attachments is ideal for moving pulp logs from wood yard to mill. It's ruggedly built to stand up under severe pounding.

Many pulp mills rely on Rex Belt Conveyor Idlers for economical transportation of pulp logs. Here, Rex Flat Belt Idlers carry barked pulp logs from barking drums to the chippers.

For any wood yard conveying problem... Chain Belt has the right answer

CHAIN Belt has designed a complete line of Rex® Power Transmission, Conveying and Elevating Equipment to give pulp mills better wood handling service...at lowest possible cost. Whether your requirements call for hauling by flume, by chain or by belt, dependable Rex Equipment will handle the job, efficiently.

When you consult with a highly trained CHAIN Belt Man you can expect him to furnish not only the *finest* equipment of its kind...but also the *right* equipment for the application.

FOREST PRODUCTS BULLETIN 53-54... An informative, illustrated booklet on how Rex Equipment serves the industry will give you a complete picture of our equipment and ability to help you. We will send your copy promptly upon request. Write CHAIN Belt Company, 4691 W. Greenfield Ave., Milwaukee 1, Wisconsin.

Forest Products Industry Looks to **CHAIN BELT COMPANY**

Milwaukee 1, Wisconsin

REX®

CONVEYING • ELEVATING • POWER TRANSMISSION FOR SAWMILLS • PLANING MILLS CHIPPING MILLS • PULP MILLS • SOFTBOARD • HARDBOARD AND PLYWOOD PLANTS

30 YEARS OF IMPROVEMENTS

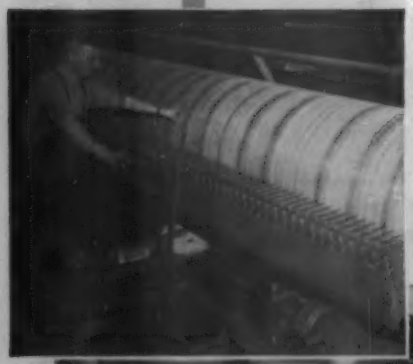
Represented by more than

600 DOMINION SUCTION ROLLS

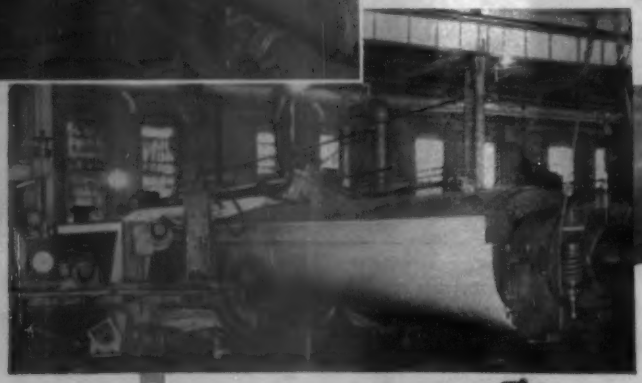
now operating in Canada

Steadily developed since 1920 from the original Millspaugh design, Dominion Suction Couch and Press Rolls today incorporate 30 years of improvements for higher operating speeds and increased operating efficiency.

About 75% of Canada's paper machines are equipped with Dominion Suction Rolls. Built to meet the requirements of each specific condition, they include: Suction Couch Rolls of all sizes up to 54" diameter, direct or gear driven, with single or double compartment boxes; and Suction Press Rolls, plain or rubber covered 20" to 40" diameter.



◀ Multiple drilling of Dominion Suction Press Roll.



▲ 54" x 284" Dominion Suction Couch Roll—world's largest.

▲ Installing a 40" x 304" Dominion rubber covered Suction Press Roll.

22" x 100" Dominion Suction Couch Roll. ▶

DOMINION ENGINEERING COMPANY LIMITED

MONTREAL • TORONTO • WINNIPEG • VANCOUVER

Microphotograph of New Process glue as it leaves the drier before being ground to uniform particle size.

SWIFT'S *New Process* GLUE

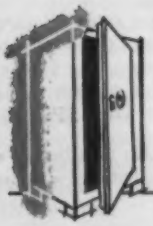
. . . FOR HIGH RETENTION OF VALUABLE TITANIUM DIOXIDE & CLAY

This is Swift's New Process Glue . . . a water soluble animal protein with *exceptional* colloidal properties. Its unusual crystalline, honeycomb structure quickly absorbs water to give a solution that promotes high retention of valuable pigments and clay in the sheet.

Because it is produced by an entirely new process which assures light color and freedom from contaminating elements, New Process Glue is high in *active* and effective properties . . . less can be used to go *farther*. Savings realized in retaining valuable pigments such as titanium dioxide, will more than offset the moderate cost. The efficient retention action will help to produce a whiter, brighter, more uniform sheet—brighter pigmentation of colored stocks.

An informative bulletin, outlining formulas, equipment and instructions for using Swift's New Process Glue is available without obligation. Write for details and remember . . .

ONE TRIAL IS BETTER THAN A THOUSAND CLAIMS



SWIFT'S
New Process GLUE
is available in a wide range of quality controlled, uniform specifications, scientifically processed to assure maximum efficiency under varied operational conditions for these important uses:

- For creping of facial and toilet tissues and paper napkins.
- For use in flotation type saveall systems.
- For retention and recovery of valuable processing components.
- For sealing.

Swift
1855 CENTENNIAL 1955
TO SERVE YOUR INDUSTRY BETTER

SWIFT & COMPANY

ADHESIVE PRODUCTS DEPARTMENT
4115 PACKERS AVENUE • CHICAGO 9, ILLINOIS

DOW

You Can See Why

SARAN LINED PIPE

is your answer to downtime losses

It's made of corrosion-resistant saran pipe swaged right inside rigid steel pipe . . . two pipes in one for longest-lasting performance.

Here's really trouble-free piping . . . saran lined pipe, fittings and valves! This modern piping has a durable inner lining that eliminates shutdowns due to corrosion . . . forms tight-fitting joints that prevent leakage. Saran lined pipe, fittings and valves won't burst under working pressures up to 150 psi . . . and saran lined cast steel fittings are available for even higher pressures. Every single piece of saran lined pipe, fittings and valves is carefully spark-tested by hand to be sure there are no pinpoint holidays or cracks in the lining.

Installation costs are low with saran lined pipe, fittings and valves, too. They can be cut and threaded in the field with modified pipe-fitter's tools. And because they're rigid, few supporting members are needed.

If your operation requires the conveying of acids, alkalies, solvents and other corrosive liquids, be sure to investigate saran lined pipe, fittings and valves today. For further information, write the Saran Lined Pipe Company, 2415 Burdette Avenue, Ferndale 20, Michigan, Dept. SP529E-1.

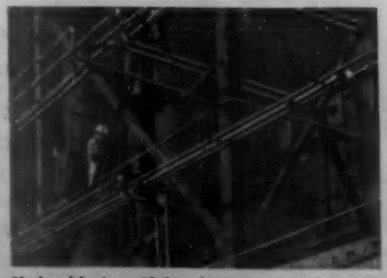
RELATED SARAN PRODUCTS—Saran rubber tank lining • Saran rubber molding stock • Saran tubing and fittings • Saran pipe and fittings.

SOME OF THE MANY INSTALLATIONS USING

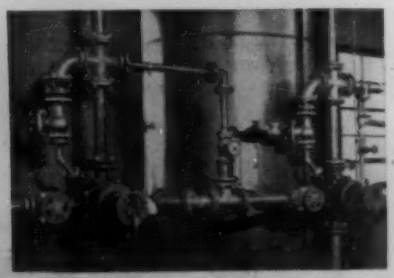
SARAN LINED

STEEL PIPE

Saran Lined Pipe is Manufactured by The Dow Chemical Company Midland, Michigan



Hydrochloric acid has been conveyed in this installation for well over seven years. Service has been eminently satisfactory.



Saran lined pipe is used here in an automatic water de-ionizer. This installation has also had a long record of uninterrupted service.

you can depend on DOW PLASTICS DOW

Hold Your Hats! Expansion's in High!

Weyerhaeuser builds its biggest mill ever! Crown Z, Bowater, Great Lakes, maybe Coosa, add big news machines

• One of the biggest expansion booms in pulp and paper history—currently well over $300,000,000—was still making curves on two wheels last month!

With pulp in stronger demand in the U. S. and abroad than ever in history, a major post-war announcement—long expected—came June 9 when Weyerhaeuser Timber Co. revealed plans for the largest pulp mill it has ever built near Aberdeen, Wash.

Who said there wouldn't be any more sulfite mills? Weyerhaeuser's will be a 400 tons per day magnesia base sulfite mill, third of its kind in the world, second to be built from ground up. First of kind—the revamp of Weyerhaeuser's 250-ton sulfite mill at Longview. First entirely new—Ketchikan.

Weyerhaeuser 7th pulp mill is designed solely for bleached market pulp for paper and paperboard, said Howard Morgan, vice president and pulp division manager. Vast stands of Western hemlock in three big Tree Farms in the area, source of its wood, made it imperative to use the sulfite instead of kraft process, he said. All other Weyerhaeuser mills built since the war were kraft, using sawmill leftover fir mostly.

Work begins this year. The mill will be finished in 1957, costing over $20,000,000.

The MgO system means heat energy and chemicals recoveries by a unique process jointly developed by Babcock & Wilcox-Weyerhaeuser-Howard Smith Paper Mills, Ltd. Literally miles of stainless steel piping, stainless valves, non-conventional digesters, after-cook dumps, evaporators, acid plant, refortification plant, etc., are required. For the most complete description of the last such plant built see PULP & PAPER's October 1954 issue, almost entirely devoted to an exclusive description of the Ketchikan mill.

An 850-acre site at Cosmopolis, Wash., at the head of Grays Harbor, just southeast of Aberdeen, is chosen. Gerald F. Alcorn, pulp division construction engineer, is directing construction. Some new improved processes are promised.

MORE SULFITE COMING!—That's not all the new sulfite coming in! Weyerhaeuser previously announced, with the new Weyerhaeuser-Rhinelander jointly owned glassine mill being built at Longview, it would add to market sulfite output there.

And J. M. Conway, president of Charmin Paper Mills, announced to PULP & PAPER that company's sulfite mill in Green Bay will add one digester, and circulation for all digesters, bringing output up 40 tons to 175 tons a day. This is conventional calcium base. Recoveries are achieved via Charmin's new world's biggest sulfite effluent torula yeast plant.

A quick run-down on other expansion Coast to Coast:

BIG EXPANSION AT ELK FALLS—Crown Zellerbach Canada announces a second paper machine for Elk Falls, Vancouver Island, 50,000 tons a year. Present Dominion newsprint machine makes 100,000. Also the new 400 ton kraft pulp mill, with construction already under way, is being redesigned for 500 tons. A 175-ton bleach plant will be built; present groundwood mill will be expanded. Target for completion of program—July 1957.

B. C. Forest Products picks Crofton, B. C., as site for $25,000,000 market bleached kraft pulp mill; MacMillan & Blodel pushes $30,000,000 newsprint, market pulp and board expansion at Port Alberni, B. C.; Alaska Pine & Cellulose proceeds with $8,000,000 dissolving pulp expansion at Port Alice, B.C.; Powell River's $20,000,000 newsprint expansion, announced last month, calls for a 260 in. Dominion Fourdinier and 4 new Waterous grinders, upping groundwood 25%.

PULP & PAPER's exclusive announcement in June of plans for continuous cooking North Western Pulp & Paper's (St. Regis') market kraft pulp mill at Hinton, Alberta, has been followed up by definite placing of order with Kamyr for the biggest continuous cooking installation in the world, tied in with a 450-ton Dominion-Minton dryer 168 in. wide.

Providing for Coast expansion, Hooker Chemicals Ltd., subsidiary of the 50-year old Niagara Falls, N. Y., firm, announces an $11,000,000 chlorine-caustic soda plant, to be completed in early 1957 at North Vancouver, B. C., first in west Canada.

Great Lakes Paper Co., Fort William, Ont.—a $20,000,000 expansion; a 110,000 ton newsprint machine, raising output to 260,000. Powell River opens new $1,000,000 Martin Paper Products subsidiary at New Westminster, B. C.; Canadian International acquires Hygrade Containers at London, Ont., announces another container plant to be built near Montreal, using output of its new board machine at LaTuque. Anglo-Newfoundland mills, having increased newsprint from 575 to 750 tons a day in 5 years, is considering further boost to 800-850. Richmond P & P completes $5,000,000 expansion, bringing capacity to 75,000 tons a year.

BIG MILL FOR CALIFORNIA—TWO MORE IN ALASKA—Another big new pulp mill in Northern California (Fibreboard's at East Antioch was first; this is farther north) is in the "embryonic stage." But engineering is being done for a big company.

Georgia-Pacific Plywood Co. is presumed to be the buyer of a 500,000 acre pulpwood unit near Juneau, Alaska, which will be sold Aug. 17. Alaska's regional forester, A. W. Greeley, conferred in June in Portland, Ore., with G-P officials, who presumably would use the unit for pulp and/or newsprint.

A Sitka, Alaska pulpwood unit is to be sold Nov. 1. Only bidder in sight is Japanese-controlled Alaska Lumber & Pulp Co. AL&P's chief consultant, Harold D. Cavin, chief engineer for the Ketchikan mill; George L. Drake, former Simpson Logging vice president, now a consulting forester, power engineers and

soil and foundation consultants, were all in the field. Herring Cove and Sawmill Creek were tested for mill sites.

BIG SCHAFER-SIMPSON TIMBER DEAL—Simpson Logging, now with two paper and board mills and other forest industries, closed one of the biggest timber deals in the West, acquiring pioneer Schafer Bros. Logging Co., Aberdeen, Wash., with 1,000,000 ft. of timber, owned or contracted, a big sawmill, railroads, etc. Could mean a pulp mill. Harbor Plywood, another big Western Washington operator, may go into chips business.

Rayonier's Hoquiam, Wash., mill adds 10 million gals. daily water supply to take care of two new Impco washers and other changes in the future. For 18 years it had 30 mgd, expanding several times on that. Proceeding—Scott expansion at Everett and Anacortes, Wash., C-Z's new paper mill at Antioch, Calif., Longview Fibre additions, Western Kraft at Albany, Ore., which may double capacity within a year after startup, Potlatch's big expansion.

C-Z announces plans to boost its Lebanon, Ore., mill output from 60 to 100 tons a day. Scott's 4th 195-in Beloit built Yankee starts up in July in Everett.

In New England, a brand new expansion is planned by a major producer.

Meanwhile, another new tissue machine, Marathon's 173-in Yankee at Green Bay, Wis., is starting up. Marathon completed a $40,000,000 financing program for present and future needs; considers a new mill or pulp supply in South or West.

PORT HURON ORDERS BLACK CLAWSON MACHINE—Port Huron Sulphite & Paper Co. told PULP & PAPER it is installing a new 140 in. Black-Clawson machine to make lightweight dense specialty papers, and building a new addition for it. It will be running by late 1955. Scott's new machine at Detroit starts up in September, ultimately $20,000,000 may be spent there.

Watervliet Paper is building a 60-ton neutral sulfite hardwoods pulp mill for expansion of coated paper output. Green Bay Paper & Pulp Co. is adding 18 dryers, increasing output of Bagley & Sewall semi-chemical board machine, with new Ross vapor systems. Bergstrom Paper will spend $1,000,000 on two machines; Rhinelander this month completes changes increasing output on No. 3. American Box Board merges with Lewis Container, will expand Colby and Wausau, Wis., converting plants. National Gypsum announced a new board plant near Philadelphia. St. Regis keeps growing, adding Kline Mfg., Galena, O., plastics plant to Panelyte division. M & O Paper adds major power units at International Falls and Fort Frances mills.

CONTINUOUS DIGESTER IN SOUTH—Significant news in South this month is decision of one company to put in a continuous digester pilot plant. This could have far-reaching results. Expansion plans now under way at one Southern mill (besides Bowaters) may soon reveal that site as one of the great pulp-paper centers in the world.

Coosa River Newsprint directors okay a study to expand that mill and are expected to vote funds in August. Robert Gair's plans expansion at its new Southern Advance mill at Hodge, La., and machine rebuilding at Southern Paperboard in Georgia. Rayonier's new mill may go to Waycross, Ga., but no decision was announced. Rice Barton is building a big tissue machine for Hudson at Palatka, Fla.

Expansion at Mobile proceeds.

BOWATERS NEW EQUIPMENT—A long-heralded $25,000,000 expansion of Bowaters at Calhoun, Tenn., upping newsprint from 160,000 to 270,000 tons by 1957, is under way. By October, it will have a 4th Impco brown stock washer, additions to bleaching and groundwood thickening with added storage and chests by Stebbins. A 3rd Beloit newsprint machine, 276 in., speeds up to 2,500 fpm, is being built and 6 new Waterous grinders will be added, each 50 tons a day, latched onto the biggest grinder motors ever built—6,000 hp Electric Machinery drives. Space will be provided for 2 more grinders later. The mill now has 8. Wyatt Metal & Boiler Works, Dallas, is building a new 6th digester, this one with No. 316 stainless steel cladding.

Drive for new machine will be a General Electric multiple-generator, amplidyne controlled section type. A Beloit 6,000 fpm winder will be supplied. Babcock & Wilcox is building a new 350,000 pph (at 850 psig, 900°F) gas-fired boiler, gas or oil fired boiler, with provision for pulverized coal. A new turbogenerator is being added. Power demand at Calhoun is being increased from 45,000 to 80,000 kw, 10,000 furnished by TVA.

Third phase of Bowaters' program calls for a hardwoods pulp mill, presumably semi-chemical.

Speed Record Made at "Jax"

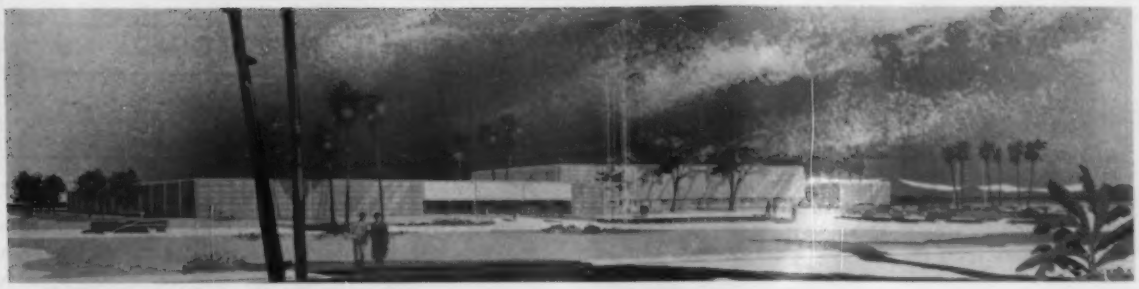
New speed marks set at St. Regis' Jacksonville, Fla., mill register amazement on face of ERIC J. CRANE (center) Production Supt., Australian Paper Mfrs., Ltd. as his hosts, S. KEPPLE PRATT, Operating Assistant to Mill Mgr. (r) and DAVID F. ROBERTS, Plant Engineer, St. Regis, show him news of records for their Beloit Fourdrinier kraft machine. Prolonged runs above 2000 fpm were attained on repeated occasions with reports that better than 2100 fpm were reached for 13 hours. This news was told a PULP & PAPER Editor wherever he toured in the South recently. Mr. Crane is visiting some 50 U. S. pulp and paper mills. He told PULP & PAPER he was most impressed with plant sizes with fewer workers and the tremendous variety of packaged goods.

Memorial to Mead Son

The George H. Mead family of Mead Paper Corp. has presented its estate "The Pillars" at Aiken, S. C., to the Episcopal church there. It will become a parish day school, "Mead Hall," as a memorial to Lt. George H. Mead, Jr., who was killed on Guadalcanal in 1942 while trying to aid a fallen member of his platoon.

Albany Felt in South

Albany Felt Co. has taken an option on a plant site at St. Stephens, S. C., 40 miles from Charleston. Albany has no immediate building plans. It is part of longe-range planning.



In This New K-C Mill in California . . .

Architect's drawing shows new Kimberly-Clark mill at Fullerton, which will house a high speed Yankee Fourdrinier and automatic converting department, where Kleenex facial tissue and Delsey toilet tissue initially will be made.

. . . These Men Will Make Paper

Kimberly-Clark's new staff who will operate the Fullerton mill. Seated, l to r: WALTON STEINER, Gen. Foreman; RONALD SEED, Cost Accountant, CALVIN YOUNG, Indus. Rel. Supervisor; CHARLES GERG, Trades Foreman; KENNETH BISEL, Trades Foreman; JAMES MURPHY, Mill Mgr.; KARL PENNAU, Mill Supt.; LEO McCOY, Admin. Supt.; JOSEPH MAERTZWEILER, Gen. Foreman; JOHN BLEIER, Quality Testing Foreman; STEVE CVLANGROS, Gen Foreman. Standing, l to r: RICHARD ANDERSON, Mill Engr.; CHARLES HANSON, Employment Administrator and Paymaster; BERTRAM JANZOW, Buyer and Small Stores Supervisor; CARL SWISTON, Chem. Engr.; ROBERT BERNARD, Gen. Foreman, DELFORD HANKE, Indus. Engr.; PETER CHURM, Planning, Billing and Traffic Supervisor.

K-C's Coast Machine May Break Speed Records

• Ground was broken with a golden spade, now preserved in headquarters at Neenah, Wis., for Kimberly-Clark's first western U. S. paper mill and Kleenex-Delsey wadding products converting plant at Fullerton, Calif., in May.

A 120 ft. long Yankee Fourdrinier, with K-C's special design high-speed headbox in a 27 ft. high machine room, will start up about next Feb. 1. It is expected to challenge all existing paper machine speed records, with one or two Yankees now reportedly hitting close to 3,000 fpm. Over a year ago, Harry Moore, president of Beloit Iron Works, predicted that even 4,000 fpm would be in reach of future tissue machines.

A radical departure for this new machine is that it will operate on less water than is usually required.

The K-C machine, when it starts up, will be the 6th new tissue machine put into operation within just two years and two months on the Pacific Coast, where population growth is the greatest in world's history for any such area. A 7th machine is very likely to be destined for the Coast by that time. Others have been speeded up.

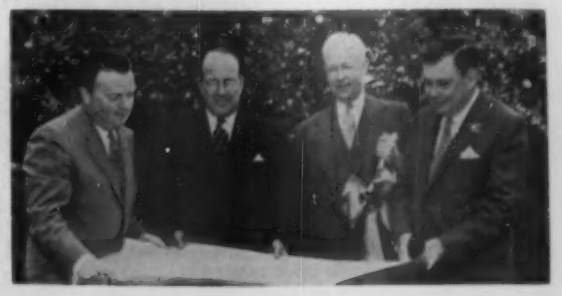
A K-C release said the Fullerton machine, that company's 20th on cellulose wadding, will make a sheet 307 miles long every 24-hr. work-day. The L-shaped plant will cover 350,000 sq. ft. Boiler house will be partially open to outdoors. The machine room will be large enough for future expansion and there will be large glass areas in its north wall. About 300 will be employed.

The mill is surrounded by orange groves, as is another paper mill at Pomona, Calif., and if history repeats itself, any possible effluent from this new mill would be in great demand for humus by the orchardists.

President John R. Kimberly of K-C left for England and Europe shortly after the ground-breaking, accompanied by Lew Phenner, president of International Cellucotton Products Co., K-C's biggest single customer.

They Okay Mill Plan

Plans for K-C mill are looked over by JAMES MURPHY, Mill Manager; J. W. LINDSAY, Vice Pres. of Lindgren and Swinerton, Inc., contractor and builder; JOHN R. KIMBERLY, K-C Pres. and N. A. OWINGS of Skidmore, Owings and Merrills, architects.



PULP & PAPER

What's New in the World of Woodpulp

Noticias Mundiales de la Industria Pulpera

GOING TO SWEDEN?—This is the time of year many industry leaders head for Sweden. Don't bring a car; its railways, 87% electrified, boats, planes are famed for comfort, says a Swedish press bureau release to PULP & PAPER. The railways offer "hotel service," renting 1,000,000 luxurious sleeping berths each year. One deluxe tour is an 8-day "Sunlight Nights Cruise" at this time of year in that land of the midnight sun.

LESS SWEDISH PULP TO EXPORT—Swedish Cellulose Co. is building a newsprint mill of 70,000 tons capacity at Ortviken, Sundsvall, Sweden, later to be doubled in size. This means the 35,000 tons of bleached Skonvik sulfite pulp, made at Ortviken for export, will be gradually discontinued. But all of its 120,000 tons of sulfate pulp from Ostrand will be bleached within three years. Now only 50,000 tons is bleached.

CHAMPION FORMS EXPORT FIRM—Champion Paper & Fibre Co., with mills at Hamilton, O., Canton, N.C., and Houston, Tex., has formed Champion Paper Corp. S.A. to handle sales of paper and board to Latin America. It acquired assets of Butler American Export Co., export firm, and will occupy its former offices at 250 Park Ave., New York City. Dana W. Pratt is president of Champion Paper Corp. S. A.

NEW CELANESE PRODUCT—Celanese Corp of America will produce a new super-strong industrial fiber, Fiber X-36, at a plant being built at Rome, Ga., U.S.A. Celanese has several viscose and other cellulose processing plants in Mexico, Venezuela, and Colombia, as well as in Canada and U.S.A.

BRIGHTER PULPS FROM U.S.A.—With close to 30 U.S.A. woodpulp mills putting in chlorine dioxide bleaching and otherwise brightening their pulps, the exporters point out they have more useful pulps to ship abroad. The brighter their pulp, the greater percentage of local inferior pulps can be blended with them, in the countries where they are used.

SCOTT OFFERS NEW PROCESS—Scott Paper Co. will license users of its recently patented improved processes for bleaching groundwood pulps. Hydrosulfite is said to result in brighter pulp and lower costs. Royalty charges averaging 10 cents (U.S.A.) per ton of pulp would be offset by these advantages, it is said. For information write Scott's Patent Counsel, Scott Paper Co., Chester, Pa., U.S.A.

FOREIGN MARKETS IN WESTERN EUROPE—The American Paper and Pulp Association recently sent members two recent reports on world paper markets. One survey covering present and future paper markets in Belgium, Luxembourg, West Germany, Spain, Switzerland and the United Kingdom, also gives details on potential and growing markets in these countries.

Considerable interest has been shown in the first survey which was on South America and a limited number of copies are still available upon request.

¿PIENSA UD. IR A SUECIA?—En esta estación, muchos de los funcionarios de nuestra industria se encaminan a Suecia. A tales viajeros se les aconseja que no lleven autos, pues los ferrocarriles de Suecia, de los cuales el 87% son eléctricos, son muy comodos, tanto como los barcos y aviones. En los ferrocarriles se ofrece "servicio de hotel," usándose un millón de lujosos dormitorios anualmente. Se ofrece un viaje especial de ocho días en aquel país del sol nocturno.

MENOS PULPA PARA EXPORTACIÓN—La Swedish Cellulose Co., esta edificando una fábrica de papel periódico en Ortviken, Sunsdvall, de 70.000 toneladas de capacidad, que más tarde se doblará. Por consecuencia, las 35.000 toneladas anuales de pulpa para exportación que ahora se fabrican en Ortviken poco a poco disminuirán. Empero, toda la cantidad de 120.000 toneladas de pulpa de sulfato de Ostrand será de grado blanqueado dentro de tres años. Actualmente solo 50.000 toneladas se blanquean.

EMPRESA EXPORTADORA CHAMPION—La Champion Paper & Fibre Co., que posee fábricas en Hamilton, Ohio, Canton, North Carolina, y Houston, Texas, ha lanzado la Champion Paper Corp SA, dependencia que se encargará de las ventas de papel y cartón a la América Latina. Habiendo comprado los bienes de la Butler American Export Co., ocupará la sede de dicha compañía en 250 Park Ave., New York. El Sr. Dana W. Pratt es presidente de la nueva empresa.

NUEVO PRODUCTO CELANESE—La Celanese Corp. of America, producirá en su nueva fábrica en Rome, Georgia, USA, una nueva ebra de extraordinaria fuerza. La Celanese posee varias fábricas en México, Venezuela y Colombia tanto como en los EE UU.

MAYOR BLANQUEZA—Los exportadores de pulpa declaran que habrán pulpas más útiles disponibles para exportar, pues en cerca de treinta fábricas en los EE UU se está iniciando el blanqueo por dióxido de cloruro y otros sistemas para blanquear. Mientras más blancas resultan las pulpas exportadas, mayores cantidades de pulpas del país se pueden agregar para lograr productos de la deseada calidad.

NUEVO PROCESO SCOTT—La Scott Paper Co. otorgará licencias para el uso de sus nuevos procesos para blanquea. Se declara que usando hidrosulfito resulta pulpa más clara a reducido costo, ventajas que sobrepasarán los derechos de diez centavos moneda norteamericana por tonelada. Se ruega que cualquiera persona interesada se dirija a Scott's Patent Counsel, Scott Paper Co., Chester, Pennsylvania, USA.

MERCADOS EN EUROPA—La American Paper and Pulp Assn. ha lanzado dos relaciones sobre los mercados mundiales de papel. Una de ellas es estudio de los mercados presentes y futuros en Bélgica, Luxemburgo, Alemania Occidental, España, Suiza y la Gran Bretaña. El segundo estudio relacionado a Sur América, despertó gran interés, y se participa que todavía quedan disponibles

What's New In the World of Woodpulp

NEW PAPER MILL IN EGYPT—A paper mill is to be constructed in Cairo by the Ahmed Abboud group of companies. Using bagasse as the principal raw material, the mill will have an annual output of about 20,000 tons of newsprint, kraft and other paper. Production is scheduled to begin in the autumn of 1956.

NEW BOOK ON WOODPULP AVAILABLE—An enthusiastically praised 48-page gravure-printed book "Wood Pulp, a Basic Fiber," has been widely distributed recently among executives of pulp-consuming companies, as well as colleges and university libraries. It is a basic and comprehensive story of woodpulp—its history and development, in the forest and in the mills, and its multiplying end-uses. Excellent photographs are found on virtually every page. It is already proving a useful tool for several pulp and paper companies in their public and industrial relations—for distribution to their employes and others in their communities. It was produced by a U. S. Pulp Producers Public Relations Committee including L. K. Larson, Weyerhaeuser Timber Co. woodpulp division sales manager; John Tower, International Paper Co., William Staples, North American Shipping & Trading Co., Inc., and Nard Jones, former associate editor of PULP & PAPER.

Additional copies may be obtained for $1.00 each. Send orders to U.S. Pulp Producers, 122 East 42nd St., New York City, U.S.A.

LATIN AMERICA AS GROWING INVESTMENT FIELD—J. P. Grace, President, W. R. Grace Co., which has a pulp and paper mill subsidiary in Peru (it purchases North American pulp to mix with bagasse), in a recent address before an Investment Bankers Association of America meeting, in Chicago, stressed that investment bankers had a tremendous opportunity in the new era of expansion in Latin America. This expansion was based on a growing population and a great demand for self improvement. It was also pointed out that W. R. Grace had already invested $30 million since 1945 and planned additional investments up to $20 million in the next three years.

MORE EQUIPMENT FOR MEXICO—The growth of the Black-Clawson Cos., which took over Bagley & Sewall Corp., which featured big Fourdriniers and finishing equipment, and Pandia, Inc., with its continuous cooking process, has added to the Black-Clawson lines now represented in Mexico by Manuel del Castillo, 1 La Catolica 45 (Edificio "Abed"), Mexico City. Mr. Castillo also is representative in Mexico for the Swedish Cellulose Co.

RAYON USES—American Rayon Institute has issued a booklet entitled "9 out of 10" detailing uses of rayon cord in all kinds of tires. A U.S. survey shows U.S. man-made fibers of all kinds have now reached productive capacity of 2,195,000,000 lbs. By Oct. 1956 it will rise another 5%, says **Textile Organon.**

Following the untimely death of J. Westergard recently, Norwegian pulp business in America will be handled by Castle & Overton.

EDITORS NOTE—

Worldwide commerce in woodpulp is setting new patterns as well as new records. As a service to many subscribers to PULP & PAPER in other countries, we are now publishing this news in both Spanish and English.

Hoy día en el comercio mundial de pulpa se están realizando grandes cambios, al mismo tiempo que dicho comercio aumenta notablemente. Con el anhelo de mejor servir a nuestros muchos lectores, mensualmente publicamos nuestras noticias mundiales en espanol e inglés.

Noticias Mundiales de la Industria Pulpera

algunos ejemplares que se ofrecen gratis a quien se comunique con la asociación.

NUEVA FABRICA EN EGIPTO—En Cairo las empresas Ahmed Abboud levantarán una fábrica de pulpa que producirá cerca de 20.000 toneladas de papel para periódicos, kraft y otros grados, empleando bagazo como materia prima. Se iniciará la producción en el otoño de 1956.

NUEVA OBRA—Se está repartiendo entre las bibliotecas de universidades y gerencias de empresas productoras de pulpa un libreto de 48 paginas primorosamente impreso titulado *Wood Pulp, A Basic Fiber.* Empleando muchas fotos, el folleto refiere la historia, desarrollo y usos de la pulpa. Ya ha resultado muy útil como propaganda e información para el público y empleados de fábricas de pulpa y papel. Fue editado por el comité de relaciones públicas de los Productores de Pulpa, de la que son socios el Sr. L. K. Larson de la Weyerhaeuser Timber Co., Sr. John Tower de la International Paper Co., Sr. William Staples y Sr. Nard oJnes que fué socio de redacción de neustra revista.

Hay ejemplares disponibles a 1,00 dls. cada uno, a quien se sirva ordenarlos de la US Pulp Producers, 122 E. 42nd St., New York 17, New York, EUA.

INVERSIONES EN LATINOAMERICA—El Sr. J. P. Grace, presidente de la gran empresa W. R. Grace & Co. ha declarado que en la América Latina hoy día existe un gran campo para la inversión de capital extranjero, pues las repúblicas se encuentran en una época de progreso rápido y terminante debido al aumento de habitantes y la demanda de mejores condiciones de vida. El Sr. Grace hizo su declaración en un discurso ante la Investment Bankers Association of America en Chicago.

La Grace posee una fábrica de pulpa y papel en el Perú, en la cual se usa pulpa norteamericana mezclada con bagazo. Se dió a saber que la empresa ha hecho inversiones de 30.000.000 dls. desde 1945 y piensa invertir 20.000.000 dls. más durante los dos o tres años que vienen.

MAS EQUIPOS PARA MEXICO—Debido a las recientes consolidaciones de las compañías Black-Clawson con las Bagley & Sewall y Pandia Inc., el Sr. Castillo ha agregado nuevas clases de equipos a los que ya tenía a su cargo, inclusive fourdriniers, equipos para acabar y sistemas de preparación. El Sr. Castillo, cuyo despacho se encuentra en Isabela la Catolica 45, Mexico, D.F., es representante también de la Swedish Cellulose Co.

USOS PARA RAYON—El Instituto Norteamericano Rayón (American Rayon Institute) ha editado un libreto titulado "Nine Out of Ten," en que se trata del uso de rayón en las llantas de todas clases. En una reseña hecha ultimamente por el gobierno norteamericano, se declara que hoy día los E.U. poseen capacidad industrial para producir 2.195.000.000 libras de hebras sintéticas de todas clases. En Octubre de 1956, según la revista **Textil Organon,** dicha capacidad aumentará otros 5%.

Tras el lamentable fallecimiento del Sr. J. Westergard, la firma Castle & Overton se encargará de los negocios de pulpa noruegos en EE. UU.

4-Star General with 4 "Stars" of Institute

Retired Gen. JAMES A. VAN FLEET, Commander of 8th Army in Korea and U.S. Army group in Greece in WW II, gave a 4-star talk to over 300 paper industry executives at Appleton, urging greater suport of Near and Middle East nations, where he predicted Russian aggression could be stopped. L to r: Pres. WESTBROOK STEELE of Institute, Gen. VAN FLEET; DANIEL K. BROWN, Chairman of Neenah Paper Co.; KARL E. STANSBURY, Board Chairman of Thilmany P & P, and ERNST MAHLER, Chairman of International Cellucotton Products and former Executive Vice Pres. of Kimberly-Clark.

Industry's Institute Keeps Growing

More trustees, a new building, refresher courses for mill men are planned—its 128 members take 85% of all U.S. output

● Just 128 companies make about 85% of all pulp and paper produced in the United States.

These 128 firms have demonstrated their progressive, long-term outlook by enrolling as members of this industry's own internationally-distinguished research center and graduate school, the Institute of Paper Chemistry. Nine new members were added in the past year. Four of them are among the biggest in the business. Even reckoning eight mergers which held down the grand total of members, their's is the lion's share of production in an industry which APPA leadership now rates as 4th biggest in the U.S.

Research and other activities of the Appleton, Wis., institution, which was founded in 1926 by only 19 companies, have increased so rapidly that it is already busting out of its seams again.

NEW BUILDING, MORE DIRECTORS NEEDED—Hardly two years after its 2-story $350,000 Activities Center was completed, it needs another functional building, the administration has decided. Plans probably will be approved in early 1956, and presumably it will fill another corner of the architecturally-attractive long-term expansion quadrangle of Institute buildings on Lawrence College campus at Appleton, Wis.

With 10 more companies joining the membership in the past year, a new and enlarged board of trustees is planned—providing broader geographical representation and rotation of trustees. Chairman Ernst Mahler said the board stayed up till midnight before the 2-day Executives Conference in Appleton in late May, discussing this first departure from a long-standing trustee set-up.

There was a record attendance at the Conference, with 326 registered.

"Our footings this year materially exceed $3,000,000," said Westbrook Steele, president or executive director of the Institute since it began. "Our net operating budget is over $1,500,000. Our payroll is in excess of $1,000,000 per year. Our budget will again be in balance."

The Institute now has 251 staff members, adding in the past year: Dr. Dard Hunter, who brought with him his famed Paper Museum from MIT; Dr. Malcolm May, pulping, from Champion's mill in Texas; Dr. John Butler, analytical chemistry; Drs. S. A. Graham, W. W. Hassler and Dean Einspahr, for a new forest genetics program; Dr. B. B. Brandt, aquatic biology; Dr. A. Neil McLeod, economics (Ruth Shallcross, economist for over 5 years is now consulting economist to the Institute), and George Jernegan, academic staff. A new Institute plan-in-the-making; Short courses for graduates and other in the industry to keep them abreast of research.

PROPOSED COMPOSITION OF NEW BOARD—September's annual meeting of the Institute board—13 elected and 3 ex-officio members—is expected to vote itself shortly out of existence, and launch the new plan for a new board of 20 members. These would be:

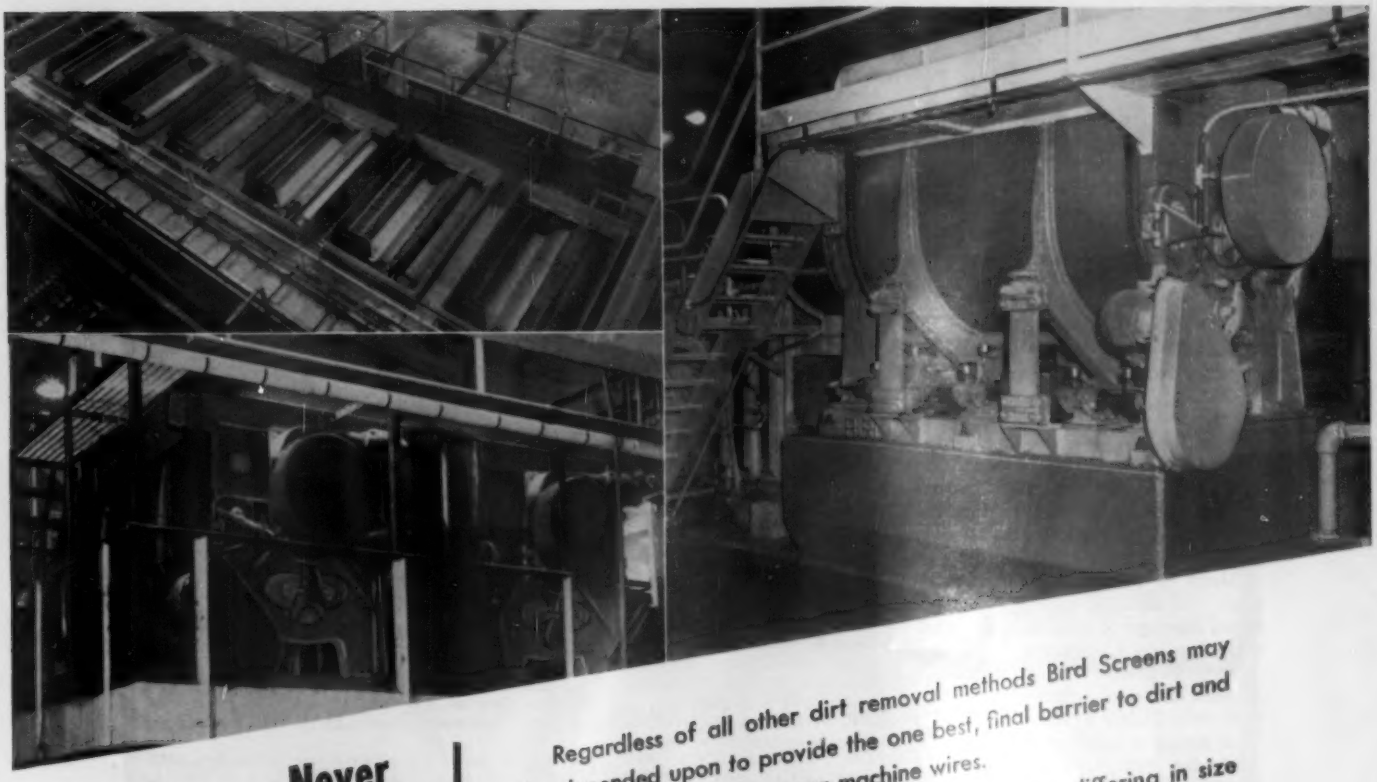
Senior trustees—6, serving 6-year terms, eligible to succeed themselves continuously (for "continuity of thinking");

Term trustees—10, serving 5 years, ineligible to succeed themselves unless off the board at least one year (to provide rotation);

Alumni trustee—1, serving 3 years, not eligible to succeed himself (to "recognize the Institute's maturity and growing responsibility of graduates");

New Members—From East, West

Among new company members of the Institute are Puget Sound Pulp & Timber Co., Bellingham, Wash., and Eastern Corp., Bangor, Me. They were represented at the Executives Conference by LAWSON P. TURCOTTE (left), Pres. of Puget Pulp and Ketchikan Pulp, and HAROLD HOLDEN (right), Pres. of Eastern Corp. It was Mr. Turcotte's first visit to Appleton—though pulp from his company's mills was there many times ahead of him.



Never Underestimate the Value and Effectiveness of BIRD SCREENS

Regardless of all other dirt removal methods Bird Screens may be depended upon to provide the one best, final barrier to dirt and to damage of delicate paper machine wires.

Bird Screens remove all dirt and foreign matter differing in size from the fibre. They comb out and individualize the fibres just before they go on the paper machine, thus improving formation. They supply a homogeneous mixture of clean fibres and water, even in weight and free of lumps, strings and slime.

BIRD MACHINE COMPANY • South Walpole, Mass.

Ex-officio members—3, the president of the Institute, president of Lawrence College and a nominee of Lawrence College.

W. Irving Osborne Jr., president of Cornell Paperboard Products Co., heads a task committee to work out the plan.

"ALARMING" SHORTAGE OF SCIENTISTS—Mr. Steele emphasized the "healthy increase" in research activity at the Institute—2,000 projects in 26 years, 75 in just the past year, 52 currently under way, and balanced among academic and institutional programs, which are primarily basic research, and independently financed cooperative research, which is both basic and applied.

Much of his annual report, however, was devoted to a growing national shortage of engineers, physicists and chemists. Comparing a reported 50,000 engineers graduating from Russian and satellite schools this year, with only 21,569 in the U.S., he said "this situation is alarming."

On the basis of reported shortage of 100,000 engineers and scientists in the U.S. two years ago, he estimated the figure may reached 300,000 this year.

The Institute received 41 applications for new students this year, of which 25 were accepted, but 11 later withdrew because of draft or other commitments. This leaves it far short of its annual quota of 24 new students. Last year it had only 16, a total enrollment of 75. Still, pressure for married students' quarters continues with 6 of 9 projected new housing units completed.

Papermaking machinery manufacturers, equipment and supply companies were asked by Mr. Steele to help in the drive to recruit more scientific students for the pulp and paper industry.

There was an ovation for Dean Harry F. Lewis when Mr. Steele noted it was Dr. Lewis's 64th birthday—May 27. He came to the Institute in its second year.

A Look into the Future—Forest Genetics Will Advance Industry

Institute announces it will have stands of trees in several regions of U.S.A. to study ways of growing them faster, bigger and with better pulping qualities. Here's what these men said about Institute's new field of research (l to r):

JOHN G. STRANGE, Institute Pres. and Treas.: "Must be prudently planned . . . mill execs must help guide it . . . holds great promise."

DR. WILLIS VAN HORN: "Since man's forebears climbed them, trees always have been important to him."

DR. PHILIP N. JORANSON, new head of genetics program (ph.d. in forest genetics, Univ. of California, from Beloit College faculty): "Our methods—breeding by selection, improvement through hybridization, polyploid production . . . latter method is new to U.S.A. . . . we'll import Swedish polyploids, cross them with Lake State diploid aspens."

DR. ROLAND E. KREMERS: "Mendelian laws of inheritance apply to trees as to men."

DR. KYLE WARD JR.: "Chemist will help geneticist . . . when is a tree really superior chemically as well as morphologically? . . . even minor chemical ingredients may prove as important as major ones."

See story for 8 points of program shown on board.

STUDENTS ILLUSTRATE STUDIES—The Conference opened with a students' panel giving executives a glimpse into all phases of their studies and thesis work. Jerrold A. Walecka told of introducing water-attracting groups into fibers to make them stronger. Robert Quick told of hemicellulose removal during neutral sulfite cooks of aspen, which may lead to better spent liquor uses. Joseph D. Parker discussed problems posed by sodium sulfate fume in kraft recovery furnaces. Don E. Marth, Jarrell B. Mugg and William H. Wiseman joined up in "engineering" a possible new sulfur dioxide recovery system.

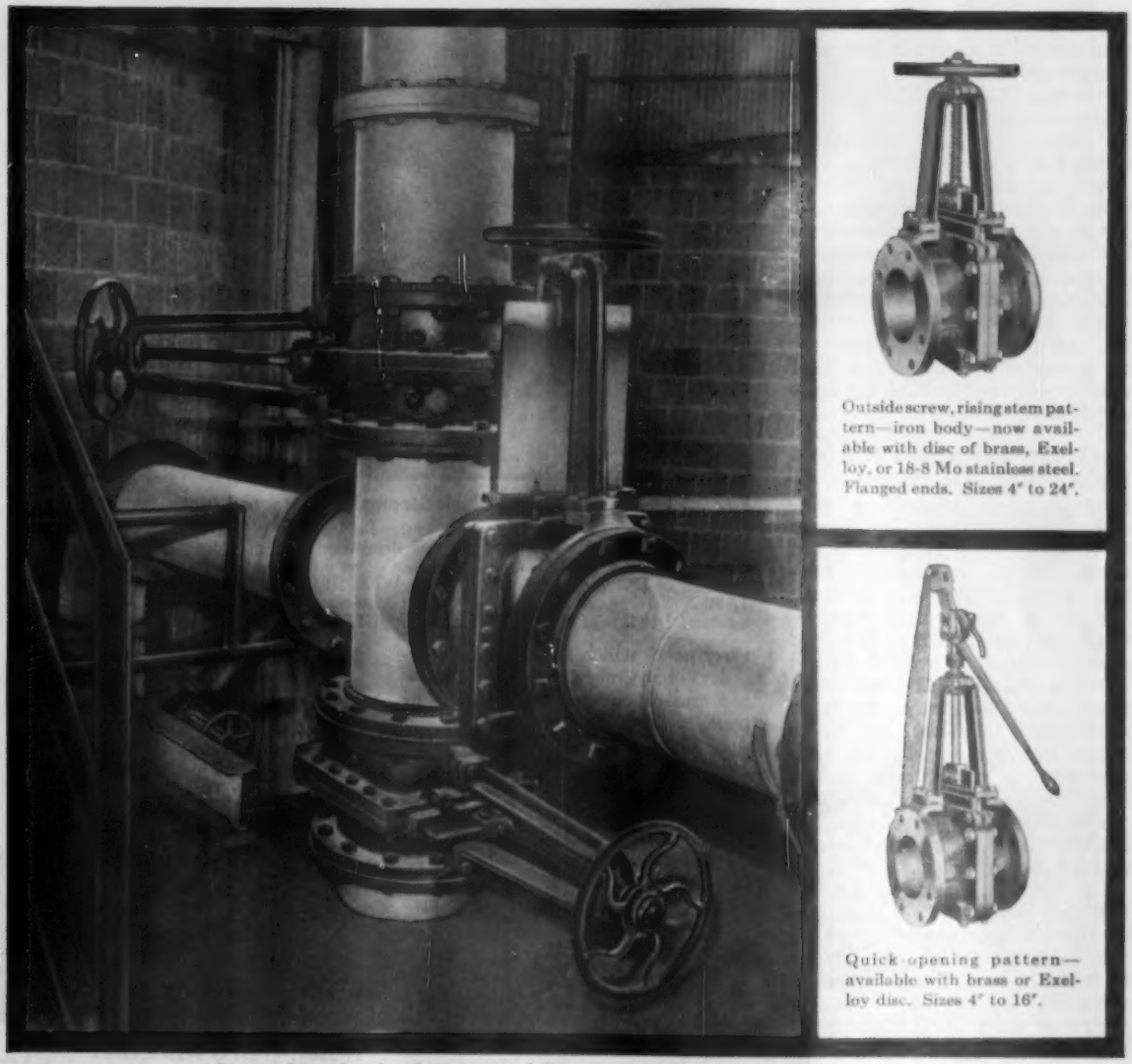
Every year the Institute enrolls one or more "special students" from mills, ineligible for degrees, but doing all usual work for degrees. One such, Charles S. Sweitzer, from Gardner Board & Carton, a Syracuse graduate, said his year at Appleton gave him a better understanding of fundamentals and technical literature and how to apply both. It broadened him, gave him self-confidence, he said.

What Would Wisconsinites Talk About?

Paper, of course. L to r: D. C. EVEREST, Chairman of Marathon Corp., and a Founder and Trustee of the Institute for 26 years; G. D. MUGGLETON, Vice Pres. and Gen. Mgr. of Combined Locks Paper Co. and President of D. M. Bare Paper Co., both Cuneo-owned mills, and RICHARD MAHONY SR., President of Appleton Coated Paper Co. and President of Wisconsin Paper Group, non-profit traffic pooling organization of 35 Wisconsin paper firms.

A ROMANTIC HISTORY—In an address which delighted listeners, brimming with wit and philosophy, Edwin W. Schoenberger, dean of students, discussed the Dard Hunter Museum, now lodged in the Institute (pictures and story, see page 110, March, 1955 P & P).

He speculated on what advances papermaking might have made by now, if more progressive nations had



Outside screw, rising stem pattern—iron body—now available with disc of brass, Exelloy, or 18-8 Mo stainless steel. Flanged ends. Sizes 4" to 24".

Quick-opening pattern—available with brass or Exelloy disc. Sizes 4" to 16".

Crane pulp stock valves in storage tank lines.

These famous pulp stock valves now also made with 18-8 Mo stainless steel disc!

Do your valves on treated pulp stock lines need extra protection against corrosive liquids and vapors?

Crane, as usual, has the answer to your problem. In addition to our famous iron body pulp stock valves with brass or Exelloy disc, we now regularly supply these valves with a Type 316, 18-8 Mo disc.

The basic design of Crane pulp stock valves remains unchanged . . . with the same nonclogging, self-cleaning features, positive shearing-action disc, and tight seating . . . but with the extra protection of an 18-8 Mo stainless steel disc. These valves are obtainable from stock, with or without a lining of ⅛" hard natural rubber, and are available in sizes from 4" to 24".

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CRANE'S FIRST CENTURY...1855-1955

known the process—the Chinese kept their process a secret for 600 years, limiting its use; Arabs forced the secret from Chinese prisoners, but for centuries only allowed hand writing on paper—no printing—because the Koran had to be written by hand. In 1150, papermaking reached Italy, in 1494 England's first mill was built. But in the 18th and 19th centuries rag shortages limited papermaking. Then after 12 centuries, paper again was made out of wood, as the Chinese had made it. Since then the production and quality of paper—"life blood of civilization" and "pacemaker of progress"—have increased by leaps and bounds.

WHAT IT EXPECTS FROM GENETICS—With John G. Strange, Institute v. p. and treasurer, as moderator, Drs. Willis Van Horn, Roland E. Kremers, Philip N. Joranson and Kyle Ward Jr., evaluated the Institute's new forest genetics program. It has a new nursery near Appleton, which will contain 5,000 seedlings and grafts from Europe, Asia, South and North America. It will introduce on this continent Swedish polyploids, to make hybrids with Lake States diploid aspens. Instead of just 2 sets of chromosomes, a polyploid tree has 3 or 4, and, rarely, more sets. A triploid aspen, should be taller and greener and may have higher cellulose percentage than a diploid.

Dr. Joranson, from University of California and Beloit College, heading up the new program, said the Lake States aspen is "a very good object for genetics improvement." The Institute will use forest tracts in other regions of the U.S. as "guinea pigs" but, he emphasized, "needless duplication of work with other centers will be scrupulously avoided."

We need to know more about gene behavior to improve tree growth and fiber quality, he said. Chromosomes carry genes which affect:

1. Volume, density, disease and insect resistance and composition of trees.
2. Pulping and bleaching penetrability, yield, quality, bleachability.
3. Refining, formation, bonding and water removal in papermaking.
4. Strength, optical qualities, absorption and permanence of paperboard and containers.

Here's the Institute's 8-point program in forest genetics research:

1. Extent of variation in tree and wood characteristics.
2. Genes vs. environment.
3. Genetic and cytological analysis.
4. Selection, hybridization, polyploid and mutation methods.
5. Interrelations between characteristics.
6. Sampling and testing procedures.
7. Cooperation in genetics-related studies.
8. Cooperation in exploiting experimental trees with member companies.

Parley About Papermaking

Chatting at North Shore Country Club dinner for Executives Conference delegates, l to r: TALBOT PETERSON, Valley Iron Works executive, GUNNAR NICHOLSON, Exec. Vice Pres. for Mfg., Union Bag & Paper Corp., and JOHN STEVENS, President of Marathon Corp.

For 26 Years, Kimberly-Clark Strongly Supported Institute

A founding company, and always a booster for Institute of Paper Chemistry activities, it was natural for K-C to send a strong delegation to Executives Conference. L to r: JOHN BLETZINGER, K-C Supt. of Sanitation Products; ABBOTT BYFIELD, K-C Director of Development; Institute Pres. WESTBROOK STEELE, greeting them, and JAMES SHIPMAN, K-C Director of Technical Research. At right, the Institute's secretarial twins—MARGARET and MARQUITA BESAW.

General Van Fleet Makes a 4-Star Talk

Four-star General James A. Van Fleet, commander of U.S. armies in Greece and Korea, was the "from-outside-industry treat" at the Executives' Conference. An important "outside" speaker is becoming an annual major attraction of the Appleton event.

Many of his audience of 326 pulp and paper executives met him personally, and some knew how he had spent hours before his appearance at the North Shore Country Club, meticulously perfecting his speech, after asking many questions about who would constitute his listeners.

Highlights from his speech:—Russia doesn't want a shooting war, the cold war can be won if the now weak Middle East and Near countries—Greece, Turkey, Iran, Pakistan and Thailand particularly, "who fear Communism more than we do"—are encouraged and strengthened, even though the Far East is stalemated and Southeast Asia is lost.

The General's major views already were well known, but the direct, detailed manner in which he expounded them was impressive. Some listeners said they felt he spoke "under wraps."

Fraser, Weir & Associates Cuts Maintenance Costs

Fraser, Weir & Associates, Inc., have opened new offices at 20 No. Wacker Drive, Chicago, as consultants in industrial engineering and plant design with emphasis on controlled maintenance systems.

The organization offers combined facilities of Paul Weir Co., services and techniques developed by H. H. Fraser & Associates Ltd., and experience of Stewart Morgan, former plant engineer, St. Helens Pulp & Paper.

They have introduced engineered maintenance in plants, mines, shops, etc., in the U. S. A., Africa, and Near East.

Experience has shown that the successful development of their controlled maintenance system is designed to radically reduce maintenance costs and down time, to improve safety and quality, and prevent abnormal depreciation of equipment.

Old hands at solving new insulation problems

Your **J-M Insulation Contractor** knows the answers that give you a better, more economical job

To be sure of getting the most efficient insulation for your plant or equipment, see the man with the world's most complete engineering and application service. He's your J-M Insulation Contractor who brings to every job the accumulation of Johns-Manville's 95 years' experience in the thermal insulation field.

J-M Insulation Engineers work hand in hand with J-M Insulation Contractors. Together they have achieved outstanding results with some of the most intricate insulation problems . . . of every type and size—in every industry.

J-M Insulation Contractors provide a complete selection of Johns-Manville quality materials. They will choose from their own stocks the best insulation for your conditions within the broad temperature range extending from minus 400F to plus 3000F.

Skilled application is a major contribution your J-M Insulation Contractor brings to every insulation job. His skilled mechanics have mastered the latest application techniques that assure you top-quality installation . . . give maximum operating economy and lower maintenance costs.

For undivided responsibility on all your insulation requirements, call your J-M Insulation Contractor. Write for the name of the one nearest you. Address Johns-Manville, Box 60, New York 16, New York. In Canada, Port Credit, Ontario.

Johns-Manville *first in* **INSULATION**

MATERIALS · ENGINEERING · APPLICATION

Picture in Dark Causes Chuckle

Exclusive photo by PULP & PAPER of complicated formula used by GLEN HEMSTOCK of Institute of Paper Chemistry which made audience at TAPPI Coating Conference and even Mr. Hemstock chukle because of its obvious intricateness. Formula used in connection with clay deflocculation and effect on flow properties of clay slips.

Day's Work Started at 7 a.m. Every Day

This hard-working crew began working each morning at 7 a.m. during TAPPI Coating Conference. K. O. ELDERKIN, TAPPI President, told luncheon guests that the committee wasn't fooling when they told him to meet them at 7 in the morning. (l to r) JOSEPH T. LOOMER, Junior Member, Coating Council, (Robert Gair Co.); JACK WINCHESTER, TAPPI Staff; CHARLES A. MORTON, JR., Chairman, Graphic Arts Committee (West Va. P&P); JOHN D. DAVIS, Senior Member, Coating Council, (Mead Corp.); HARRIS O. WARE, Vice Chairman, Coating Council, (Hercules Powder); RICHARD T. TRELFA, Chairman, Coating Council (Watervliet Paper Co.); JOSEPH J. THOMAS, S. D. Warren Co.; AL D. BONANNO, Secretary, Coating Council Kelco Co., and JACK E. WILBUR, Program Chairman (St. Regis Paper).

Unveil New Coating Processing in Cleveland

"Jet-propelled" expansion draws record attendance—G. K. Ferguson says 90% of printing papers will be coated

• For the 6th successive year, the TAPPI Coating Conference, held at Cleveland, O., May 23-25, hit another new record high registration—435—and there is seldom any other meeting of its size where there is such complete attention to business at hand. Outside halls and rooms were virtually empty when sessions were on, testifying to the intense interest in this industry's "jet-propelled" expansion in coating paper and paperboard.

Several delegates were from mills where they haven't started coating—but they're going to. Others said they were considering going into coating.

The conference showed a desire of delegates to establish basic problems connected with coating and particularly machine coating. There was a freer flow of information, it seemed. This augurs well for what will happen at the 7th conference—in Philadelphia, May 7-9, 1956. Joseph T. Loomer, Robt. Gair Co., Inc., New London, Conn., will be general chairman. Chet Landes, American Cyanamid, program chairman.

FORECAST BY FERGUSON—George K. Ferguson, president of Watervliet Paper Co., whose own mill is expanding production of coated papers, thanks to a new process permitting use of the long-ignored lowly "weed" hardwoods outside his mill door in Michigan (story elsewhere in this issue), predicted the day will come when 90% of all printing papers will be coated. He said costs must be reduced while technical advances are made. He foresaw automatic paper inspection and approval.

"The coating frontiers are up to you," he said. "All we need to know is how fast America is growing and how zealously we can guard our freedow." He quoted David Sarnoff, RCA president: "Our material progress today, when viewed from the vantage point of 1980, will seem a fumbling prelude."

"A Fumbling Prelude"

GEORGE K. FERGUSON (left), President of expanding Watervliet Paper Co. (their "know-how in coating is considerable," once said another company president), told the Coating Conference: "1955 will be regarded as a fumbling prelude to 1980."
CHESTER G. LANDES (right), American Cyanamid Co., Stamford, Conn., will be Program Chairman of May 7-9, 1956 Coating Conference to be held in Philadelphia. His Conference theme—synthetic adhesives.

Jam-packed sessions reflected the sigificance of technical highlights, programmed by Jack Wilbur, St. Regis, Deferiet, N. Y., and associates. John D. Davis, Idaho-born, assistant to Mead's Vice Pres. George Pringle, was general chairman of the conference. Watervliet's technical director, Richard T. Trelfa, heads the coating committee council associates, and C. A. Morton Jr., West Va. P & P, the TAPPI graphic arts committee, which collaborated in the program.

For the first time in this industry, the role of pigments was laid before mill men in a comprehensive way. A major objective today of the industry is to find ways of applying less water with pigments. Unveiling of the new Batello Institute electrostatic dry coating process, owned by Bergstrom Paper Co., and to be licensed by that company, opened up new horizons. There are still "bugs" to work out of electro coating, and it may be mostly useful to specialty coaters and converters, were views of at least two prominent delegates.

One committeeman from one of the big machine coating companies said—with some feeling—that these conferences will not be really successful until all large mills enter into them. Of 19 papers, only 4 were given by

Speakers—First Session

Lead-off speakers at Coating Conference (l to r) JOHN R. GUNNING, Provincial Paper Co., Georgetown, Ont.; who discussed application of Deculator for dearating coating color; ALBERT W. WILSON, Editor, PULP & PAPER, who told of future outlook for coated papers; and ROBERT B. REIF, Battelle Memorial Inst., Columbus, O., who disclosed the new electrostatic process for applying dry coating on paper developed for Bergstrom Paper Co.

Speakers—Second Session

Left to right: C, GERALD ALBERT, Minerals & Chemicals Corp. of America, Chairman; JOHN W. SWANSON, Inst. of Paper Chemistry, who discussed mineral species in clays and relationships to flow properties at high solids; GERALD HAYWOOD, new Technical Asst. to Director of Research, W. Va. P&P Co., who keynoted pigments session, and GLEN HEMSTOCK, Inst. of Paper Chemistry, who spoke on clay deflocculation.

mill personnel—from Kimberly-Clark, West Virginia P & P, Provincial and Lowe Paper.

Another commented that the new developments in testing equipment which were described, such as the electron microscope and Hercules high shear viscosimeter, will be put to good use.

EYE APPEAL AND GLAMOR IN DEMAND—The lowly matchbox was used as a case history by opening speaker Albert W. Wilson, editor, PULP & PAPER, to show how a company recouped 10 years of sales losses in just one year by "glamorized" new box and book match covers multi-color roto-printed with a varnish coating and lots of "eye appeal." Samples from Ohio Match Co., which reversed its downward sales history, were distributed among the audience.

Invited to keynote the conference by presenting the future of coated papers and board from the viewpoint of publishers, printers, advertisers and other end-use consumers such as supermarkets, Mr. Wilson said his survey indicated "the day may come when most paper is coated." Coating of boxboard should climb from about 20% to 75% in a few years, most offset paper will be coated, even newsprint may be coated in order to keep pace with advertising competition of television and magazines, which "show a roast beef which really looks like one."

"Advertisers demand realism and the third dimension effect in printing," he said. "The new supermarkets are demanding more packaging pleasing to the eye."

John R. Gunning, Provincial Paper Ltd., Georgetown, Ont., described the adaptation of the Deculator by Rotareaed for deaerating coating color. The equipment is used on an air-knife coater with satisfactory results. A Rotareaed spokesman, asked about cost, replied a typical installation would be about $9,000.

ELECTROSTATIC DRY COATING—Robert B. Reif, Battelle Memorial Institute, disclosed Bergstrom Paper's new method for coating papers uses the coating material suspended as a dust cloud in air rather than water as the vehicle in a strong electrostatic field. The principle in this radical departure from conventional systems is an electro precipitator which deposits the coating material on the vertical web of paper (see picture). Major advantages, he said, are adaptability of a wide variety of coating particles, ease of maintenance, low costs which compare favorably with conventional systems, particularly for smaller jobbers.

The coating powder of either negative or positive gas ions is in an acrylic coating chamber. The unipolar ions rush to the wire and are neutralized. Three to 20 lbs. of coating can be applied at 100 fpm. Heat, using an infra-red dryer, fuses coating to the paper. Pigments are in a heat sensitive binder.

Some questions asked Mr. Reif:

Q. What are variations across and along the sheet? **A.** Uniform across a 15 lb. coating, plus or minus 1 lb. Same along the sheet.

Q. What are possibilities of explosions? **A.** Possible, but can be controlled.

Q. How do you control coating weight? **A.** By density of powdered cloud.

Q. Must paper be dry or wet? **A.** Can use wet surface if desired.

Q. Any penetration through sheet? **A.** Usually none.

PITCHING FOR PIGMENTS—Keynoting the pigments sessions, Gerald Haywood, West Va. Pulp & Paper, said clay, for its quality and cost, is most widely used, chalk is used for

A New Coating Process

Radical departure from conventional is this Bergstrom Electrostatic coater which uses air rather than water as the vehicle in a strong electrostatic field. Major advantages are adaptability of wide variety of coatings, simple maintenance and favorable costs.

Speakers—Third Session

Left to right (seated): B. W. ROWLAND, Georgia Kaolin Co., who discussed machine coating; S. C. LYONS, Georgia Kaolin, who co-authored paper on the new replica technique for electron migrographs of coated surfaces and Chairman WILLIAM R. WILLETS, Titanium Pigments, who during previous session discussed dispersion and showed Titanium Corp's. film, "The Ninth Element".

Left to right (standing): JOHN RICE, Lowe Paper Co., who revealed studies on varnish resistance of clays and pigments; MAURICE J. LANDBERGE, General Dyestuff, who talked on tinting and coloring of water vehicle coatings; JOSEPH J. COMER, Penn. State College, who delivered paper co-authored with Mr. Lyons; ROBERT W. HAGEMEYER, Wyandotte Chemicals, who discussed calcium carbonate pigments, and CLYDE W. LEAF, Wyandotte, his co-author.

Speakers—Fourth Session

Left to right (seated): ROBERT F. REED, Lithographic Technical Foundation, who discussed coated paper properties and relationship to print quality in lithography; J. HOMER WINKLER, Battelle Memorial Inst., who presented a new approach to the printability evaluation problem; Left to right (standing): CHARLES A. MORTON, West Va. P&P, Chairman; ALEX GLASSMAN, R. R. Donnelly & Sons Co., who discussed coated paper requirements for high speed letterpress printing; and WALTER W. ROEHR, Kimberly-Clark Corp., who spoke on effect of smoothness and compressibility on printing quality. Not shown is O. C. HOLLAND, Interchemical Corp., who treated audience to a movie on ink film splitting.

brightness and ink receptivity, and titanium for brightness and opacity. Calcinated clay and ground limestone, he said, are used in production of dull coated papers.

At this session, W. R. Willets, Titanium Pigment Corp., presented some aspects of dispersion and also a film. John N. Swanson and G. Hemstock from the Institute of Paper Chemistry presented papers on mineral species in clays and their relationship to flow properties at high solids, and on clay deflocculation effects on flow of clay slips.

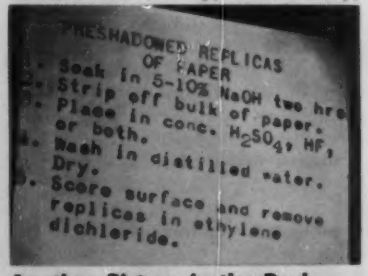
The pigments talks continued next day with a Wyandotte Chemicals team led by Robert W. Hagemeyer discussing calcium carbonate, now used in coating in the U. S. at rate of 100,000 tons a year. Machine coating progress was discussed by B. W. Rowland of Georgia Kaolin and varnish resistance of pigments by John Rice of Lowe Paper. New ultra fine particle size talcs from California and Nevada are used for brightness and opacity, reported R. S. Lamar and M. F. Warner of Sierra Talc & Clay Co. Demand for more colored coating was recognized in a paper by M. J. Landberge of General Dye.

A panel session on pigments witnessed a varitable barrage of questions fired at Messrs. Swanson, Willets, Warner, Lyons, Leaf, Hagemeyer, Hemstock, Landberge, Rice and Comer.

An outstanding paper described a new replica technique for making electron micrographs of surfaces of paper sheets. This was by J. J. Comer and H. W. Stetson, Penn State, and S. C. Lyons, Georgia Kaolin.

The preshadowed carbon replica method has afforded dramatic proof, said Dr. Comer, of the correctness of the Woodward-Lyons hypothesis that gloss developed by finer clay sizes was due to their preferred orientation parallel to the surface of the coating, whereas coarser stacked particles deposit so that edges of their component crystal plates are at angles to the coating surface.

SOME GRAPHIC ARTS PROBLEMS—Primary requirements for coated paper for high letterpress printing, said Alex Glassman, R. R. Donnelley & Sons Co., are runnability of the paper in the press and subsequent operations; capabilities of the paper to reproduce art copy with fidelity,


PRESHADOWED REPLICAS
OF PAPER
1. Soak in 5-10% NaOH two hrs
2. Strip off bulk of paper.
3. Place in conc. H_2SO_4, HF, or both.
4. Wash in distilled water. Dry.
5. Score surface and remove replicas in ethylene dichloride.

Another Picture in the Dark

PULP & PAPER'S camera recorded formula for making preshadowed replicas of paper as developed by J. J. COMER, H. W. STETSON, Penn. State U. and S. C. LYONS, Georgia Kaolin Co.

uniformity and desired gloss on inked areas and the appearance and "feel" of final product.

Smoothness and compressibility of coated papers have profound influence on printing quality was treated by Walter W. Roehr, Kimberly-Clark Corp., Neenah, Wis. He described K-C's brush surface analyzer used for making smoothness determinations.

The study of printability is a big one stated J. Homer Winkler, technical advisor, Battelle Memorial Institute, Columbus, O. He advocated a printability index to help printers in

Used to Determine Smoothness

Surface roughness tester developed by Kimberly-Clark Corp., Neenah, Wis. to show effect of smoothness and compressibility on printing quality of coated paper. WALTER W. ROEHR described how this analyzer is used for making smoothing determinations.

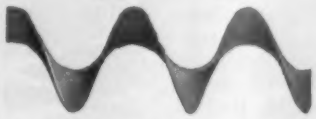
Make sure the screw conveyors you buy pass this quality test!

If they don't . . . investigate LINK-BELT's sound engineering and quality manufacture . . . your assurance of top performance

1. Is flighting accurately formed?

Link-Belt's specialized machinery assures accurate forming, producing uniformity of flighting curvature.

2. Are diameters uniform?



Only specially selected steels are used to meet Link-Belt's rigid specifications.

3. Will the hangers match your exact needs?

Hangers are available in gray iron or steel frames in a range of styles and with various bearing materials.

4. Will installation be easy?

Straightness is checked before shipping, and extra care is taken in handling and loading. Jig-drilled coupling bolt holes facilitate assembly.

5. Can gates be installed on the job?

Gates are available for bolting or welding in place right on the job for ease of trough opening location.

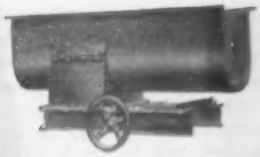
6. Are troughs fabricated to your specifications?

Link-Belt's accurate fabrication assures better fit of all components. Choice of metals to fit your need.

7. Is the drive fully integrated?

Only Link-Belt builds a complete line of gear and chain drives, couplings, bearings, shafting.

8. How wide a choice of spouts and gates do you have?



Discharge spouts and gates can be fixed or detachable. Hand or rack-and-pinion, flat or curved slide gates.

9. Is full ordering information readily available?

Link-Belt's 92-page Screw Conveyor Book 2289 contains complete ordering data. Ask your Link-Belt representative or distributor for your copy today.

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19,600 **SCREW CONVEYORS**

LINK-BELT COMPANY: Executive Offices, 307 N. Michigan Ave., Chicago 1. To Serve Industry There Are Link-Belt Plants, Sales Offices, Stock Carrying Factory Branch Stores and Distributors in All Principal Cities. Export Office: New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World.

selecting a combination of printing conditions to achieve profitable printing of a desired quality.

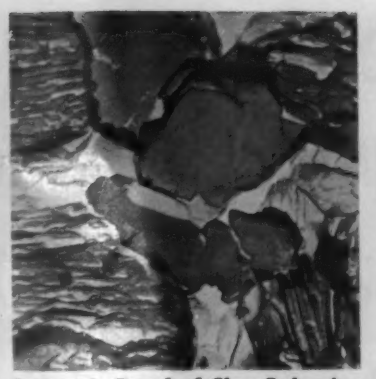
Basic elements in printing operations that determine the quality of the final printed result are the paper, ink, ink transference and the printing form or plate, he added.

He gave a definition of printability by R. M. Shaffert of the Institute: "Printability—in the art of impression printing, the degree of correspondence between the resolution, contrast, and tone density of the print, and the resolution, contrast and tone density inherent in the printing plate surface."

There is no single problem in graphic arts having as widespread interest as printability, Mr. Winkler emphasized.

Printability, according to Robert F. Reed, Lithographic Technical Foundation, Chicago, is the combined properties and condition of paper that affect its press performance. These properties are plasticity, curling tendency, pick strength, moisture resistance, moisture absorbency, surface ink absorbency and alkaninity. The conditions that affect press performance, he said, are flatness and freedom from dust, fibers and foreign matter. The problem of printability will never be solved until all press-rooms are air-conditioned, he said.

Finally, there were some remarkable motion pictures of ink-splitting shown by O. C. Holland, Interchemical Corp. These were taken with an exceptionally high speed camera at about 8,000 frames per second. It is so fast, said Mr. Holland, that by the time a person started it and took his finger off the release, 100 ft. would have been taken.



Dramatic Proof of Clay Behavior

An electron migrograph, a preshadowed carbon replica of surface of paper hand coated with 72 micron kaolin. One of Conference highlights was paper by Joseph J. Comer, Penn. State, illustrated by beautiful slides showing preshadowed carbon replicas of various coating surfaces.

Kimberly Mill Further Reduces Sulfite Discharge

Kimberly-Clark's Kimberly, Wis., mill has further reduced its discharge of sulfite effluent into the Fox River, substantially beyond state requirements. Now 70% is withheld from the stream; for the past 5 years about 40% had been withheld.

Storage in impervious clay holding ponds, with capacity increased to 20,000,000 gals., made this possible. Very little seeps into the ground. Much Kimberly effluent is used as roadbinder, and during the construction season the demand exceeds mill output, so surplus is drawn from the ponds.

This mill's daily capacities are 120 tons sulfite pulp, as well as 140 groundwood and 320 book paper.

JIM LANE, who reads PULP & PAPER, reports on Baie Comeau newsprint speed records.

High Speed Average For Baie Comeau Machine

Newsprint machines speed records have been in the industry limelight lately. Replying to an inquiry by PULP & PAPER, G. J. (Jim) Lane, division manager of Quebec North Shore Paper Co., Baie Comeau, Que., has this to say:

"The highest speeds do not always indicate the highest productions; also, high speed does not mean much unless it is maintained. We think that the best comparison is on a monthly basis, giving average speed and average daily production per inch of trim on a 32 lb. basis.

"Our best month was April 1955, when our No. 2 machine had the following monthly averages:

Speed ..... 1925 fpm
Lbs. per inch trim
(32 lb. basis) 2238

"We have run the machine at a maximum speed to date of 2050 fpm and have had fairly sizeable runs at 2020 fpm, but we are not able to average these speeds for more than two or three days at a time. Our best day had a production per inch of trim (32 lb. basis) of 2520 pounds.

"Our machine has a 262 in. wire, and the average trim is 243.3 in."

Once-Scorned Trees To Make Fine Papers

● Watervliet Paper Co., Watervliet, Mich., is building a 50 to 60 ton semi-chemical neutral sulfite pulp mill, utilizing once-scorned local Michigan hardwoods, with a complete recovery plant, first installation of its kind in the industry. This will permit considerable expansion of its coated paper output.

A special Mead process for recovery —Mead developed it but has had it "on ice"—will be utilized. Babcock & Wilcox Co. is building the unique recovery unit which is required.

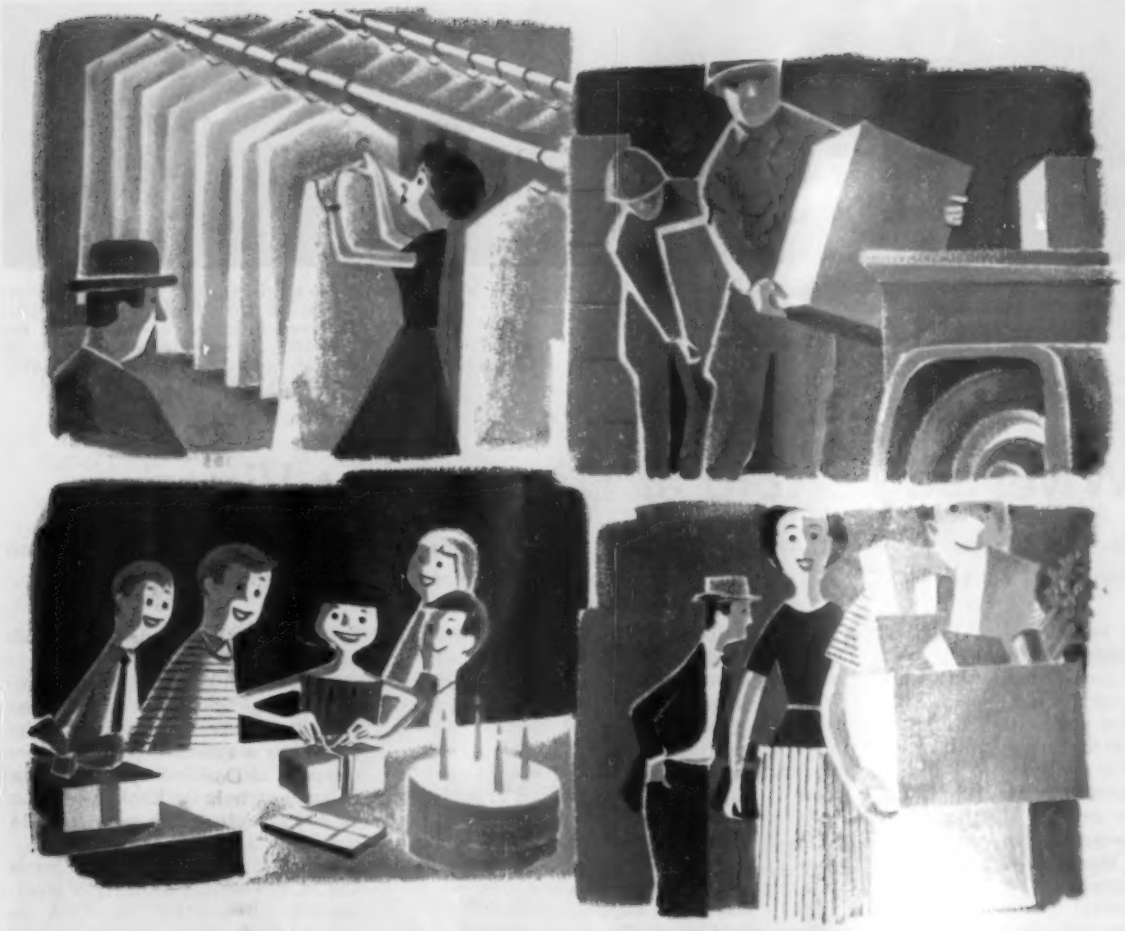
George K. Ferguson, president of Watervliet, told PULP & PAPER it will be about 12 months before the plant is in operation. Watervliet began conducting experiments to use low-value Michigan trees this way during World War II. In recent years it operated a 10-ton rotary-digester pilot plant, but until the recovery process was developed, state pollution restrictions held up progress.

Interesting feature of the new plant will be that its semi-chemical pulp will serve as part of the furnish, along with purchased pulps, for top quality coated book, offset, litho and playing card paper.

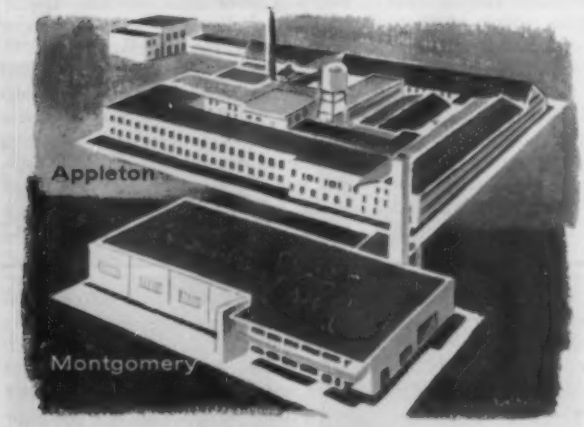
Watervliet discontinued using waste paper early this year. Its new plant is on the historic "turning points" toward an upward revival turn again in Michigan timberland development and use—almost two generations since its softwoods were depleted for lumber. New pulping processes at Michigan mills at Filer City, Muskegon and Otsego likewise have opened up new uses for once-scorned hardwoods.

Bolton to Expand Products

HAROLD D. STUCK (left), Vice Pres. of Research and Development, John W. Bolton & Sons Inc., announces appointment of Dutch-born GERRITT HILBRAND DE REUS (right), to newly created post of Chief Development Engineer. He had been with Lamb Grays Harbor Co., Hoquiam, since 1951, where he designed pulp mill equipment. Mr. Stuck, with Bolton since 1913, said Bolton plans more product development, design and improvement.



How paper helps market the wares of the world



General Offices, Appleton, Wisconsin
Plants at Appleton, and Montgomery, Alabama.

From producer to consumer, paper for packaging is a vital and rewarding link . . . ambassador of good will and good deeds . . . preventing costly spoilage or damage to everything from foods to machinery, clothing to crockery . . . upgrading quality and appeal . . . building sales of goods and services everywhere.

And in at the very start of packaging paper—in every field where paper goes to work . . . Fourdrinier wires. Appleton Wires. Good wires—by a 59-year test of industry-wide acceptance and use.

Appleton Wire Works, Inc.

Appleton, Wisconsin

SCENE AT WESTERN INTERNATIONAL meeting at Victoria (l to r): MAX A. BAILEY, Westminster Paper Co., General Chairman of the convention and Chairman of Pacific Coast Div. of Supts. Assn.; J. B. BECK, Oregon Pulp & Paper, First Vice Pres. of Pacific Coast Supts.; LOUIS W. PUMPHREY, Westminster Paper Co., elected Chairman of Western Div. Tech. Sec. CPPA; MARION SMITH, Sidney Roofing & Paper Co., in charge of arrangements in Victoria; HARRY BAMFORD, Westminster Paper, who spoke on groundwood bleaching; DR. RALPH PATTERSON, Powell River Co., co-chairman of the convention; D. L. STEWART, Powell River, who spoke on high-yield sulfite pulping of hemlock; D. A. LIVINGSTON, Esco Ltd., Secy-Treas. of Pacific Coast CPPA.

Wives Set Record at Erie – and at Victoria

Pacific Coast hears how kraft mills speeded machines, make better liner

At Hammermill, more papermakers' wives than ever before, troop by machines

● Springtime in Victoria, serious discussions of industry problems and a chance to meet friends and business neighbors from South, East and West, plus golf at Oak Bay, attracted over 600 to the Western International (Tri-Way) meeting in British Columbia's capital city May 19-21, a new record for any Canadian meeting outside of Montreal. Many wives attended.

Max Bailey, machine room superintendent, Westminster Paper Co., general chairman, compared the figure with three years ago when the same group met in Victoria. Only 300 attended.

Pacific Coast Branch, Technical Section, CPPA, Pacific Section of TAPPI and Pacific Coast Division of the Superintendents Association were joint sponsors.

Powell River's annual award for technical paper, presented by M. J. Foley, president of that company, went to I. J. Eisner, Crown Zellerbach Canada Ltd., Ocean Falls, whose subject was sulfur dioxide recovery in a sulfite mill.

HIGH YIELD SULFITE SUCCEEDS—D. L. Stewart, chemical engineer, and J. L. Keays, superintendent research and development for Powell River Co., aroused considerable interest in their paper on experimental digester studies on high yield sulfite from Western hemlock, which they said could readily be cooked by the conventional calcium base process to any yield up to 68%, producing a pulp which except for a reduction in tearing strength with increasing yield appears approximately normal in quality.

"With indirect heating, high circulation rate and uniform temperatures possible in small digesters, acceptable pulps can be prepared in 3½ hours cooking time," they reported. "Attempts to further reduce the time resulted in dark or hard centers in chips."

HOW KRAFT MACHINE WAS SPEEDED UP—With so many paper machines being speeded up and otherwise improved for higher production, the paper of R. R. Marriott, technical supervisor, Crown Zellerbach, Port Townsend, Wash., on modernization of its Fourdrinier kraft No. 2 machine was timely.

Piecemeal improvements over 6 years were made, rather than shut down the machine. Production of 175 tons a day was brought up to 265 tons, and the eventual objective is 350 tons.

Installation of Morden Stock-Makers was the first major move, and the second was acquisition of a Beloit pressure type stainless steel-lined headbox. A plywood "bathtub" (deaerating dam) was put in after raising the stuff box to eliminate entrained

● There certainly was one remarkable record set at the Hammermill Paper Co., in Erie, Pa., when it threw open its gates to all 400 delegates at the Pen-Jer-Del Superintendents meeting in late May. More papermakers' wives than ever toured a paper mill before trooped through the new semi-chemical pulp mill, past the 38 beaters, 10 jordans, 7 steaming Fourdrinier machines, the modern almost-automatic finishing room, all the way to the shipping platform.

Most of the superintendents and peddlers brought their wives and quite a few daughters, and well over 100 women gamely took Hammermill up on its invitation, many of them seeing the inside of a mill for the first time in their lives, and enjoyed it immensely.

The wife of C. F. Kingston, Hammermill's own paper mill superintendent, who has lived right next door to the mill for many years, had never seen its "insides" before. Her husband was chairman of the meeting, which broke all Pen-Jer-Del division attendance records.

Hammermill also gave every woman a corsage and a box of Hammermill Bond note paper, suitably inscribed as a souvenir, and the paper company also picked up the tab for a dinner party at the Kahkwa Club for all 400 delegates, who came from 14 states and 3 Canadian provinces.

President Don Leslie greeted guests and M. E. Graham, secretary of Hammermill, made a talk in which he stressed the importance of a chain of command in mills and said the superintendent had an important role in effecting this.

A panel discussed taste and odor problems in food packaging. K. C. Neuenfeldt of Hammermill reviewed engineering management of its expansion. Dr. E. C. Jahn of Syracuse U. told of work there on developing chemigroundwood see Great Northern mill story, April, 1955, issue of PULP & PAPER). Peddlers put on a hilarious show: "Battle of Lake Erie."

MORDEN

SLUSH MAKER®

Patented

For Pulping

The Morden "Slush-Maker" can be used for either continuous or batch operation. Whichever method is used, there is a rapid defibering.

These thumbnail sketches show some of the many tanks that can be designed to suit specific mill requirements.

Dry-End Continuous Broke Pulper with Single Rotor

Low-Headroom—Side-Discharge Tank

Special Single-Wall Cylindrical Tile Tank

Standard Double-Rotor Tank for Larger Capacity

Special Cylindrical-Top Steel Tank

Dry-End Continuous Broke Paper Pulper with Double Rotor

Standard Tank with Special Charging Port

Advantages

- **Full Bales or Slabs** can be charged by hand, lift truck or conveyor.
- **Dry-End Broke** can be handled continuously, directly under the paper machine.
- **Wet-Strength Papers** are readily reclaimed with the "Slush-Maker".
- **Rapid Pulping Action** permits greater production per day.
- **Operation** can be batch or continuous.
- Vigorous **Circulation** thoroughly mixes the colors and chemicals in less than a minute.
- Completely **Cleared Stock** reduces amount of beating and jordaning treatment required after pulping.
- **Tramp Materials** will not damage or bind the pulping unit.
- **Side-Mounted Pulping Unit** permits low-headroom applications, simple drives.

Northeastern States Representatives:
ORTON CORPORATION, Fitchburg, Massachusetts

Midwestern States Representatives:
DAN B. CHAPMAN, Appleton, Wisconsin

MORDEN
STOCK PREPARATION EQUIPMENT
MACHINES COMPANY

3420 S. W. MACADAM

PORTLAND, OREGON

air, but this was later replaced with a structure of concrete and tile. A No. 3 Emerson Claflin refiner with hydrating shell liner was installed, and this worked so well that two more were added. By last July machine speed had been increased from 875 to over 1400 fpm. A new Beloit winder with speed of 4500 rpm compares to the old one's 3300 rpm. Ten high pressure dryers were added.

"To keep the machine operating," said Mr. Marriott, "we spent several months going over every detail. Safety precautions were covered in detail. We split the crew in two and worked 12 hours a shift."

Mr. Marriott said considerable down time was saved during the brief shutdown last July by the use of special drilling jigs which were made in the shop. They were used on the machine frame for the anchoring of the bearings. Time was also saved by preliminary bracing of the machine hood and the use of special beams and legs which allowed the whole section of hood to be removed and replaced in one piece.

To hit 1800 fpm and 350 tons average daily output, it is planned to include a magnetic amplifier speed control, increase water vapor removal, add new table rolls, a new reel, Feeney felt dryers, modern motor generator equipment, additional dryers and hot air to the machine, a saveall and a Bauer Cleaner.

VALLEY SECONDARY HEADBOX IMPROVES LINER—A Valley Iron Works secondary headbox installed two-thirds the distance down the wire on Longview Fibre's No. 6 Fourdrinier kraft machine is making a superior liner with better printing surface and a better light bleached liner to cover solid bleached sheet. Bending and sticking qualities equal their cylinder liner, and the Fourdrinier liner is superior in stiffness and high tear test. These facts were revealed by Henry W. Dauterman, Longview Fibre superintendent.

Structural fiber is a pulp with problems of its own, according to E. J. Reichman, research engineer, Simpson Logging Co., Shelton, Wash., and application of paper tests is wholly unsatisfactory. A new tester was developed for insulation board.

DOMINION MACHINE ADDS PICKUP—Howard Graham, technical director, and Jack Youden, paper mill superintendent, Elk Falls Co., described the Dominion vacuum pickup installed there last year. A year ago, the Dominion newsprint machine was producing 7000 tons a month, averaging 1600 fpm; today it turns out 8000 tons at 1860 fpm.

Said Mr. Graham, "The new setup is like comparing a modern car with a Model T."

Harry Bamford, groundwood superintendent, Westminster Paper Co., told of his company's Becco system bleached groundwood pulp. Other papers described continuous chlorination of bleach liquor, by Harry S. Fisher and Richard Carlson of Penn Salt; zinc hydrosulfite brightening of groundwood by Vincent de Felice, Publishers Paper Co.; and effect of paper on color changes in meat, by F. O. Whipple, Crown Zellerbach.

Session chairmen were Louis W. Pumphrey, Westminster Paper Co.; John M. McEwen, Weyerhaeuser Timber Co., and J. B. Beck, Oregon Pulp & Paper Co. The luncheon was addressed by Hon. Robert Bonner, attorney-general of British Columbia, Halvar Lundberg, Seattle chemical engineer, was master of ceremonies at the "Wake-em-up Breakfast" with entertainment by the International Brotherhood of Migratory Peddlers, and induction of members of the newly organized Vancouver Waiting Room.

The Technical Section, Western branch, CPPA, elected Louis Pumphrey of Westminster Paper, its new chairman; Howard Graham, first vice chairman; Dr. Morris Wayman, second vice chairman, and Don Livingston of Esco, Ltd., secretary.

ALSO AT VICTORIA (l to r): F. O. WHIPPLE, Crown Zellerbach, spoke on the effect of paper on color changes of meat; JOHN McEWEN, Weyerhaeuser Timber Co., Acting Chairman, Pacific section TAPPI; EVERETT REICHMAN, Simpson Logging Co., who spoke on structural fibre pulp; HARRY S. FISHER, Penn Salt, whose paper was on continuous chlorination of bleach liquor, written in collaboration with RICHARD E. CARLSON, also of Penn Salt, and ROBERT R. MARRIOTT, Crown Zellerbach, who spoke on machine modernization at Port Townsend.

Dick McDonald in India; Geo. Glatfelter Promoted

RICHARD A. McDONALD (left), Exec. Committee Chairman and an organizer of East Texas Pulp & Paper and former Exec. Vice Pres. of Crown Zellerbach, has made a recent trip to India to make preliminary studies for a U. S. site at India's Industrial Fair, New Delhi, Oct. 29-Dec. 15, and consult with Indian officials. He is Mgr. of the U.S. Industry-Government Exhibit there.

GEORGE H. GLATFELTER (right), who is new Gen. Supt., P. H. Glatfelter Co., Spring Grove, Pa., where he formerly was Asst. to Mill Mgr. and Asst. to Purchasing Agent. He joined Glatfelter in 1947 after attending Cheshire Academy. He is married to the former Lois Rohrbaugh of York, Pa. and they have a son and daughter.

Syracuse Honors For Drs. Spencer and King

Honoring Drs. C. C. Spencer and Oden King, who have each served on the faculty 35 years, a dinner was recently held by pulp and paper technology and college of forestry associates at State University of N. Y., Syracuse, N. Y.

Dr. Louis Wise, of the Institute of Paper Chemistry, who was there for wood chemistry lectures, was a "decoy" honor guest, so as to make it a surprise on the real ones. Dr. Spencer took his Ph.D. work under Dr. Wise and Dr. King appeared before Dr. Wise for his doctorate exam.

Sales—$200,000,000

St. Regis Paper Co. sales in 1954 amounted to $200,090,143, almost equal to the record level of $200,334,207, achieved for 1953.

Directors reported net income of approximately $14,931,000, equal after preferred dividends, to $2.62 a share on 5,470,933 shares of common outstanding at the end of the year.

WOODPULP—on the move!

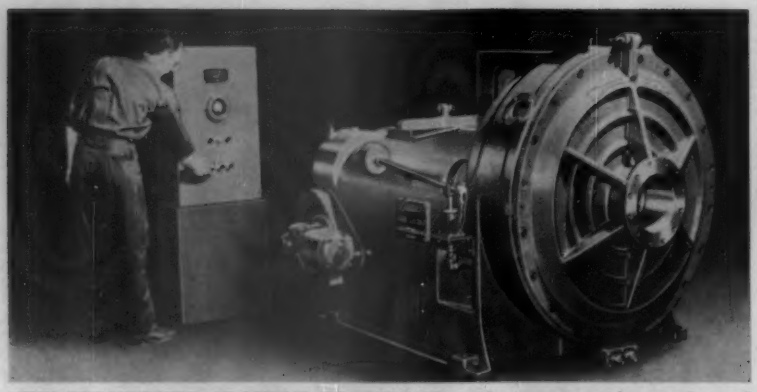
Weyerhaeuser woodpulp courses steadily along the economic by-ways of the nation, finding its way into hundreds of diversified end-products that improve our daily living. Vast, varied industries depend upon an uninterrupted supply of this essential raw material which is such a vital part of the American economy.

Less than a quarter of a century ago, a large portion of a tree that could not be economically converted into useful products was burned or allowed to rot. Modern concepts of full wood utilization and sane forestry management were not then economically feasible.

Today, Weyerhaeuser Timber Company processes convert the tree's raw materials into useful and marketable products. The best possible value and utility are obtained from each tree harvested.

Diversification in processing is the key to complete wood utilization. New products from woodpulp mean expanding markets and steady payrolls.

Good forestry practices plus laboratory research assure industry of a long-term, never-ending supply of Weyerhaeuser woodpulp.



NEW PRESSURIZED "DOUBLE D" REFINER, with operator and control panel shown in perspective. So far, dozen mills have ordered or installed new machines in 26 to 42 in. disc diameters.

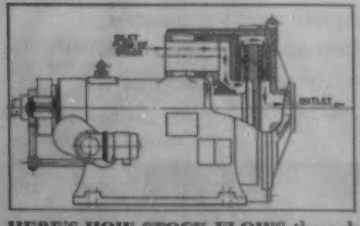
New Refiner Goes in 12 Mills

Glatfelter to have battery of "Double D's"—mills in Washington, Virginia, Michigan, Gulf adopt new unit

• Already successfully used in a number of large mills in South, Midwest and Far West, E. D. Jones & Sons Co.'s new pressurized Double D (double disc) refiners have been selected to handle primary refining at P. H. Glatfelter Co.'s new paper mill in Spring Grove, Pa.

Work on the new pressurized Double D's was started 4 years ago. The first 42 in. unit has been operating continuously since Oct. 1953 in a kraft pulp and board mill in the Gulf States. Two more Southern kraft mills, a board mill in Michigan and a Washington state kraft mill, where two units are running, are now using the new stock preparation machine. Of 12 mills which have installed or ordered them, 8 are for multiple installations.

Just before Glatfelter ordered a battery of the refiners, a unit was readied for startup in June in a Virginia mill. The Double D refiners at Glatfelter will be followed by Jones Majestic jordans fitted with Accru-Set automatic controls in preparing stock for the new Rice-Barton Fourdrinier machine. New type Jones 51W all-stainless screens, a Jones Brokemaster for automatic continuous broke handling under the dry end of the machine and broke clearing with a Jones Stockmaster are other new equipment for the Glatfelter mill.



HERE'S HOW STOCK FLOWS through new Jones "Double D"

Dwight E. Jones, vice president of E. D. Jones & Sons, says pulp flow through the Double D is made almost completely independent of disc design, which permits widely varying of flow-through rate and changing of stock without changing discs, changing stock consistency without other changes for required action except power regulation, and refining without aeration.

The refiner is a pump-through machine and normally there is a pressure drop through the machine. Throughput is controlled by a valve on inlet side, a valve on the outlet side of the refiner and the pressure drop through on the refiner.

Mr. Jones said the refiner has a unique straight-forward mechanical adjustment with advantages of being simple and rugged, having adjustments unaffected by inlet pressure, adjusting gear fitted with semi-automatic back-off in event of pulp pressure or main motor failure, and even with substantial wear, the machine is completely operative. Automatic controls can be used.

It has two stages of refining in the same machine. If desired, the disc set on inlet side can differ from those on outlet side, and they can be solid or cast sectional discs. Engineering features assure disc parallelism and maximum rigidity, Mr. Jones asserted.

The Pittsfield, Mass., company and Alexander Fleck in Canada announced the new double disc refiners in disc diameters of 42, 34 and 26 in. diameters, with power requirements ranging from 700 hp to 200 hp.

Inspect Finnish Mill

Andrew J. Kleiler, asst. chief engineer and Clarence H. Butterfield, sales engineer, of Downingtown Mfg. Co., recently visited Finland to inspect the new 192 in. Downingtown Fourdrinier in operation at Veitsiluoto Oy. In Finland they were escorted by Tom Latimer, U. S. Machinery Co., Downingtown's overseas representative.

The new Veitsiluoto mill, less than 40 miles from the Artic Circle, is completely modern. Newsprint and bleached and unbleached sulfate and sulfite will be produced.

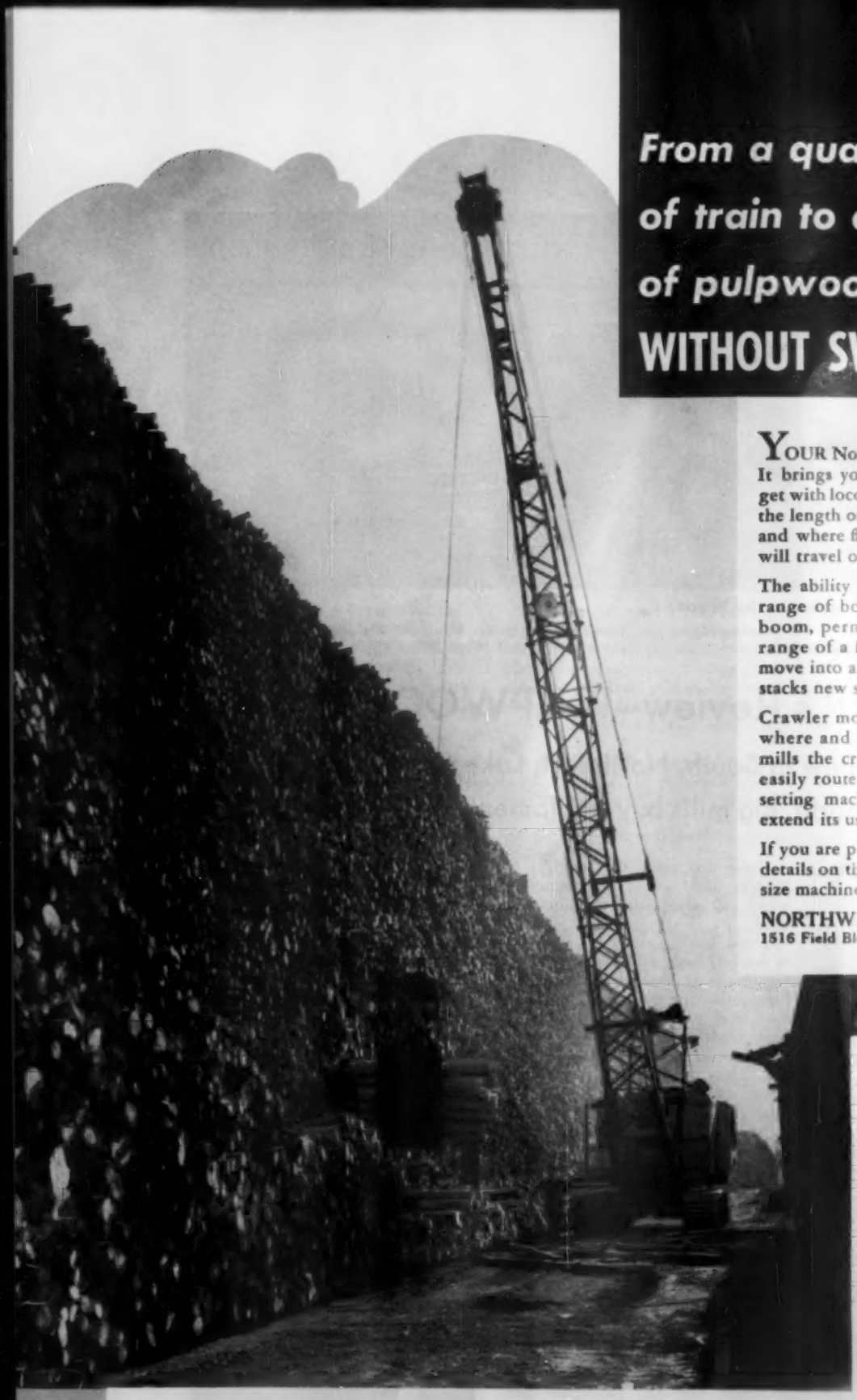
Scott Reduces Effluent

Gilbert L. Heath, mill manager, Falls Power & Paper Co. division of Scott Paper, Oconto Falls, Wis., announces an 8-acre semi-circular storage lagoon and a roadbinder program will substantially improve Oconto River conditions. He said over 60% of sulfite solids will be withheld from the river during low flow and summer months. The lagoon is capable of holding 18,000,000 gals., six months' collectable full-strength spent liquor, and for roadbinding, about 7,500,000 gals. are used.

Harper Goes West as Mgr.; Woodruff Upped at Pt. Angeles

ROBERT E. HARPER (left), became Res. Mgr., effective July 1, of the new R-W Paper Co.'s glassine-greaseproof mill being constructed at Longview, Wash., described as the most modern of its kind. This joint venture of Rhinelander and Weyerhaeuser, which supplies slurry pulp, starts up in May 1956. Mr. Harper, Operations Asst. to the President at Rhinelander, and formerly Admin. Eng., has been with Rhinelander 23 years. He was in charge of new design, supervision of purchases and selection of materials during recent expansion of the Wisconsin mill. He is a graduate in chem. eng., University of Nebraska.

ELLIOTT H. ("WOODY") WOODRUFF (right), whose appointment as Acting Asst. Res. Mgr. at the Port Angeles, Wash., sulfite cellulose operations was a "chain reaction" to recent appointment of FRED DOHERTY to be Gen. Mgr. of all Rayonier Southern operations. HARRY THURLOW succeeded him as Res. Mgr. (temporary assignment) at Fernandia, Fla., and JOHN B. GRAY became Acting Res. Mgr. at Port Angeles, succeeding Mr. Thurlow. Mr. Woodruff was former Technical Director at Port Angeles.



From a quarter of a mile of train to a mountain of pulpwood . . .

WITHOUT SWITCHING A CAR!

YOUR Northwest Crawler Crane goes anywhere. It brings you a flexibility and stability you can't get with locomotive crane equipment. It will travel the length of a train without an extra line of track and where flats or drop-end gondolas are used, it will travel on the train itself.

The ability to handle long booms and the wide range of boom hoist equipment, including live boom, permits using storage areas beyond the range of a locomotive crane. Your crawler can move into a pile as it loads out or move out as it stacks new shipments and still reach the car.

Crawler mobility means high loading capacity where and when you want it.—And, for small mills the crawler has additional value. It can be easily routed to other jobs—The loading dock, setting machinery, handling bulk materials will extend its usefulness.

If you are planning new crane equipment get full details on the Northwest. Ask for a catalog on the size machine you need.

NORTHWEST ENGINEERING COMPANY
1516 Field Bldg., 135 South LaSalle Street, Chicago 3, Ill.

HERE ARE A FEW OF THE WELL-KNOWN PAPER MILLS THAT ARE USING NORTHWESTS

- Hoberg Paper Co.* Green Bay, Wis.
- Kalamazoo Vegetable Parchment Co. Espanola, Ont., Canada
- St. Regis Paper Co. Pensacola, Fla.
- St. Joe Paper Co. Tallahassee, Fla.
- B. F. D. Paper Co. Ogdensburg, N. Y.
- Brunswick Pulp & Paper Co. Brunswick, Ga.

*machine pictured

NORTHWEST

The Crane That Goes Anywhere

10 to 50 TONS

Typical of Increasing Mechanization in the Woods . . .

Diamond Iron Works portable chipper (left) is operating in pine woods of Eastern Oregon. Chips are transported to mill.

John Deere 40 tractor (right) planting pine with Lowther tree planter was part of recent APA show at Tomahawk, Wis.

PULP & PAPER's Review—PULPWOOD TRENDS

What's new in South, Northeast, Lake States, Pacific Coast and Canada. Big mills buy equipment for farmers

SOUTHERN U. S.—MORE EQUIPMENT, MORE CONCENTRATION YARDS—In the South, progress both as to spread of source and delivery from stumpage to mill yard has been experienced in the pulpwood field. Use of power saws continues to expand as recognition of their efficiency spreads. Lighter weight units have aided in this.

Southern use of the lightweight "bob-tailed" truck driven into the woods cutting and/or gathering sites continues, it being said by dealers that a large number of small pulpwood producers are not financially able to own both the commercial unit and the family automobile. So the producer buys the small truck to double for personal use on week-ends or evenings.

Obvious advantages enjoyed from the pulpwood concentration yard have contributed to their continued spread. Characteristically they are wide enough for one or two rail spurs with adequate spread for loading from both sides (each), an adequate modern small office building, and mobile equipment from transfer direct from truck to rack pulpwood rail cars. Gravel surfacing insures all-weather operation and space is provided for pulpwood reserves. Pulpwood handling cranes are found mostly in paper mill company-owned yards. In dealer-owned yards the trend is to lift-type units of various capacities which call for a smaller capital investment.

These yards operate on an "eggs to market" basis with the dealer issuing checks as soon as the wood has been scaled and loaded out (unloaded from truck to car or reserve). In company yards, receipt is for the dealer who pays off at an office on adjoining site. These yards have resulted in spread of supply to many one-load producers who just cut their own woodlot.

Some company yards truck from concentration yards to mill using large trailers carrying 8 to 10 cords each, this being effected where distance and/or other factors are favorable. All wood handling in concentration and mill yards is efficiently effected with real modern equipment, providing a high efficiency. This yields a fast turn around for the pulpwood truck, more trips per day, and saving of man hours per cord. These two factors—yard and power saw—have materially increased production per man-hour in Southern woodlands. Attention is now beginning to focus on the stump to truck factor.

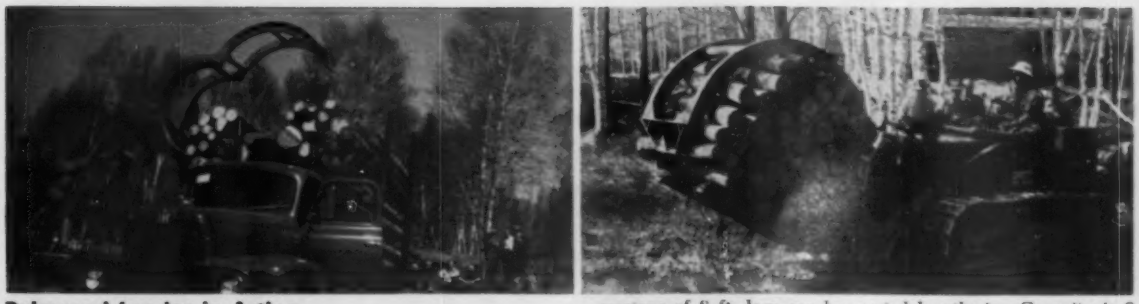
Of major importance in the spread of mechanization—at least two big Southeast pulp and paper companies offer to buy mechanical equipment as a gift, or loan such equipment, to any and all comers, farmers or small lot owners who will cut and sell pulpwood. The purchase of such equipment, especially more expensive items, had been slow among the small local producers. This may speed up mechanization.

NORTHEAST U. S.—MECHANIZATION IS A "MUST"—This is because of high wage scales, greater hauling distances and limited harvest periods.

Probably most profound development was the successful adaptation of the chemigroundwood process by Great Northern Paper Co. at its East Millinocket, Me., mill. For the first time hardwood trees were placed on

Switch in South Foresters

FRANK DAVIS (left) has joined Champion Paper & Fibre Co., woodlands staff at Huntsville, Tex., and DON SMITH (right) takes his place as area forester for Southern Pulpwood Conservation Assn.



Pulpwood Loader in Action
At Tomahawk, Wis., APA saw Drott Pulpwood Rack loading International Harvester RF-192 truck, with 16 ft. bed, so two sections of 8 ft. logs can be carried lengthwise. Capacity is 6 cords. Picture at right shows Drott Pulpwood Rack on International Harvester TD-6 handling a load of wood.

equal footing with softwoods. This conversion of long whole logs or hardwood into satisfactory newsprint may lead to similar expansion at their larger Millinocket mill.

Mechanization is a tremendous factor in getting some 500,000 cords annually to Great Northern mills. To do this, 65 tractors, 10 cranes, hundreds of trucks, numerous conveyors and 9,000 pulpwood cars are needed (PULP & PAPER, April, 1955).

Operations of the S. D. Warren Co. in Maine are among the finest examples of mechanizations in the Northeast. After felling and trimming by power saws, the long-length logs are hauled by small tractors to the main hauling roads where they are picked up by a sulky and large tractor for hauling to the slasher mill. After being cut into 4 ft. lengths, logs are loaded onto pallets and hauled to the mill.

S. D. Warren estimates that there is a perpetual supply of pulpwood within a 50-mile radius of its Cumberland, Me., mill. Their new program is to buy as much wood as they can from this area; adding some $3,000,000 to this area annually.

Notable development in the Northeast in 1954 was opening of a concentration yard at Bow, N. H., by Champion-International Co., which will draw its annual 25,000 cords from a 75-mile radius for its mill at Lawrence, Mass. At Bow, long length logs, a size familiar to this saw log area, are debarked in an Anderson debarker, cut into 4 ft. lengths. A fleet of 18 rack-end pulpwood railcars operate solely between Bow and Lawrence.

LAKE STATES – TRENDS DISCLOSED AT TOMAHAWK–Chemical debarking of hardwoods in the Lake States area may open the door to a new and larger source of pulpwood. What is believed to be the first chemical debarking program in this area went into trial stage operation last year on native scrub oak in Central Wisconsin. Nekoosa-Edwards Paper Co., after watching similar operations in Pennsylvania, has treated between 10 and 15 thousand cords of oak. Minnesota, Wisconsin and Michigan have an abundant supply of oak, commonly considered a "weed tree."

The fast growing aspen, also in abundance in this region is becoming more widely used for various paper grades, and is expected to make many mills independent of outside wood sources, except for smaller amounts of spruce required for furnish from Canada.

A definite trent to more mechanization is seen in all the pulpwood operations of the Lake States companies with innovation of new and modified skidding and pulpwood handling equipment.

Mechanization was the theme of the Spring APA meeting near Tomahawk, Wis. The group saw 8 Drott attachments for wood handling and hauling and land clearing demonstrated. All were mounted on various International Harvester crawler tractors, TD-6 to TD-24. E. A. Drott, president of Drott Mfg., explained his attachments take the "bull work" out of logging.

The Drott grubber blade, with hydraulic tilt feature, and mounted on an I-H TD-9 crawler, uprooted heavily rooted trees. "Break out" force of this unit is close to 50,000 lbs.

N. C. F. Nielsen of International Harvester, told PULP & PAPER that this equipment has proven succesful in land clearing operations in the South.

Diesel Power Equipment, Ely, Minn., showed a movie on pulpwood loading with his Swedish Hiabob crane mounted on Caterpillar D-4 crawler.

Howard Palmquist, Marathon Corp., told PULP & PAPER his company's Anderson Debarker at L'anse, Mich., is expected to produce 50 cords per 8 hour day during summer.

H. M. Shepard, Lake States logging engineer for APA demonstrated chemical debarking methods. Don Eisenach, M & O Paper, and W. E. McCraw, Caterpillar Tractor logging expert, discussed same.

A Harris A. Lowther standard model tree planter drawn by a John Deere model 40 crawler tractor, planted 3-year old Norway pine seedlings. Planting was progressing at 14,000 trees per 8 hour day.

PACIFIC COAST–NOW CHIPPING IN WOODS–Latest development in the Pacific Coast pulpwood logging picture is in eastern Oregon where high-quality pulp-type chips are produced economically right in the woods.

Panel of Speakers at APA Lake States Meeting
(L. to r) HENRY SHEPARD, APA, FRANK PATER, National Safety Council, R. ST. AMANT, Tomahawk Timber Co., LES POLLARD, M & O Paper Co., DON EISENACH, M & O, R. HELBERG, Employers Mutual, W. E. McCRAW, Caterpillar Tractor Co.

Blue Mountain Chip Co. is producing pulp type chips from lodgepole pine of more uniform quality than those chips produced by some sawmills from wood leftovers, used for the new insulation-acoustical type board produced by Oregon Fibre Products Co., Pilot Rock, Ore., on a 168 in. Dowington Fourdrinier and Coe dryer.

The chipping machine, a Model 145 20-knife chip mill built by Diamond Iron Works and powered by a 300 hp diesel, is mounted on a low-boy semi-trailer. Capacity per 8 hours is about 160 units of chips; it can take up to 16 in. logs. The thin bark does not affect quality and is not debarked.

Don Barnes, owner of Blue Mountain, predicts they will also operate portable barkers in the woods.

Another Pacific Coast trend is increased utilization of smaller-sized logs, even chunks scarcely large enough to scale out, which are coming out of the big logging operations. Another is the increased use of alder (like poplar in the East) as a pulping species. Production of one big new board machine is based on it.

Integrated companies are literally "sweeping the woods clean." Not every veteran logger enjoys handling the little pieces but they realize it's good business.

Light, mobile equipment is rapidly gaining universal acceptance. Pre-logging, salvage logging and insect-control logging account for the swingover to both tire and crawler-mounted loaders and yarders. There are now many portable spar trees in use. Some of these are mounted on heavy iron wheel undercarriages pulled by tractors to a new setting. Others are mounted on steel or wooden sleds for pulling. They can be quickly set up and guyed.

Log handling at re-loads and dumps has been put on a mass production basis. Use of steel strapping for entire truck or train-car loads of logs has simplified the tasks of rafting and booming; storage space in the water is thus increased. Strapping eliminates the sinker problem. This alone saves operators great sums.

CANADA—MORE TRUCKS AND TRACTORS—Pulpwood production in Canada last year was more than 14,000,000 cords, of which 12,300,000 cords were consumed in Canada and 1,700,000 exported. Value of pulpwood production was close to $400,000,000.

In recent years an increasing amount of hardwood has been put through the mills. The cost of pulpwood in Ontario is said to be the highest in the world, so waste is something none can afford.

In Eastern Canada there is more mechanization. Use of trucks and tractors is increasing operating on snow roads in the winter. Volume of pulpwood transportation from woods to mill has been maintained at a more constant level, with less dependence on the Spring log drives.

In British Columbia, when timber is taken out of the forest it isn't always determined what the end use will be until the log reaches the mill whether for pulp, lumber or other products. The problem of diverting logs to most effective use has been simplified in recent years by the growing integration of operating companies. Most of the larger lumber companies now have their own pulp mills or chipping plants. An increasing number of hydraulic and other types of whole log barkers are being installed.

Economies have also been effected through greater use of salvaged small logs. Lighter equipment is used. Trucks carry an ever-increasing proportion of pulpwood as compared with railroads. Deepsea Davis rafts still account for much of the log towing to the pulp mills, but one company introduced specially designed steel log carriers, self-dumping, as big as cargo ships.

Congress Won't Act

It is unlikely Congress will act at this session to eliminate 12-man and seasonal exemptions for forestry and logging operators. The status of "employe" definition bills, too, may be deferred until Congress re-convenes in the Fall.

Buys Out Loggers

Weyerhaeuser Timber Co. has bought out Wirkkala Bros. Logging Co., Naselle, Wash., about 50 miles downstream on the Columbia River from Longview. The purchase includes considerable investment of logging trucks and heavy equipment as well as of standing timber.

Kids' Tour of Woods with Signs and Markers

Crown Zellerbach's timber department conducted a tree farm demonstration near Camas, Wash. in May for some 500 youngsters, in class groups.

The company-owned forest land, three miles from Camas, was equipped with signs and markers telling the story.

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PULP & PAPER PRESENTS

on following pages

1955

PULPWOOD ANNUAL

American Pulpwood Association's annual meeting papers and reports

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Pulpwood Production Statistics and other Useful Review and Statistical Information

see

PULP & PAPER'S 1955 WORLD REVIEW NUMBER

(published July 25, 1955)

EQUIPMENT NEWS— For Woods Operations And Wood Preparation

A card or a note to PULP & PAPER, 1791 Howard St., Chicago 26, Ill., will get you more information on this equipment, if you are interested (Just ask for PULPWOOD EQUIPMENT NO. . . .):

No. 1—New heavy duty loader unit for a crawler tractor. This 1¼ yd. capacity machine has an exceptionally wide control that permits digging to a depth of 30.5 in. below ground surface and raises to a maximum height of 12 ft. 8 in.

No. 2—A new hydraulic log splitter has been placed in production after successful use in the field since 1950. In operation, a quartered log is pushed completely through the axes, leaving the machine clear for incoming logs. The log elevator is troughed to center the log on the vertical axe. The splitter is in sizes to handle logs 24, 30 and 38 in. diameter, and 4 to 8½ ft. long.

No. 3—A new sound film as well as literature is available for viewing a new pulpwood loader. Movies were made at concentration yards in South Atlantic and South Central states. Modern techniques for both near and far side car loading and trimming with the heavy duty loader are shown. A specification sheet and field reports from Georgia and South Carolina are available. Arrangements could be made to see the film.

No. 4—A new booklet offers information on a modern line of industrial tractors and working equipment, which also includes information on allied equipment such as loaders, log carts, winches, etc.

PULPWOOD ANNUAL 1955

Edited by

AMERICAN PULPWOOD ASSOCIATION

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Do every pulp cutting job faster, easier and better with the powerful Homelite Model 17 Plunge Cut Bow Saw. Rips through 18 inch pine in 18 seconds . . . fells with lowest stumpage . . . bucks without breaking your back . . . no pinch or bind on any cut. Practically eliminates down-time and boosts production and profits to new highs. Ask your Homelite representative for a free demonstration of the 3.5 hp, Model 17 Bow Saw. If you want even more power see the mightiest one man bow saw ever de-

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PULPWOOD ANNUAL — 1955

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FOREWORD

The first two issues of the PULPWOOD ANNUAL were released during the forepart of two years of the greatest consumption of pulpwood in our history. We are pleased to note that this 1955 issue is being released in a year that also gives promise of an unprecedented activity in pulpwood production and consumption.

We feel very fortunate in being able to present to our members and others in the pulpwood, pulp and paper industries, this Annual at a time when they are expanding and can use its contents most effectively.

As in previous issues, it includes the papers of our Annual Meeting, a review of Association activities, and our organization and program for the coming year.

Again we are indebted to PULP & PAPER (a Miller Freeman publication) for making this possible. We suggest that you will find the papers this year cover well the challenge of the future to pulpwood producers and consumers in this country.

W. S. BROMLEY
Executive Secretary

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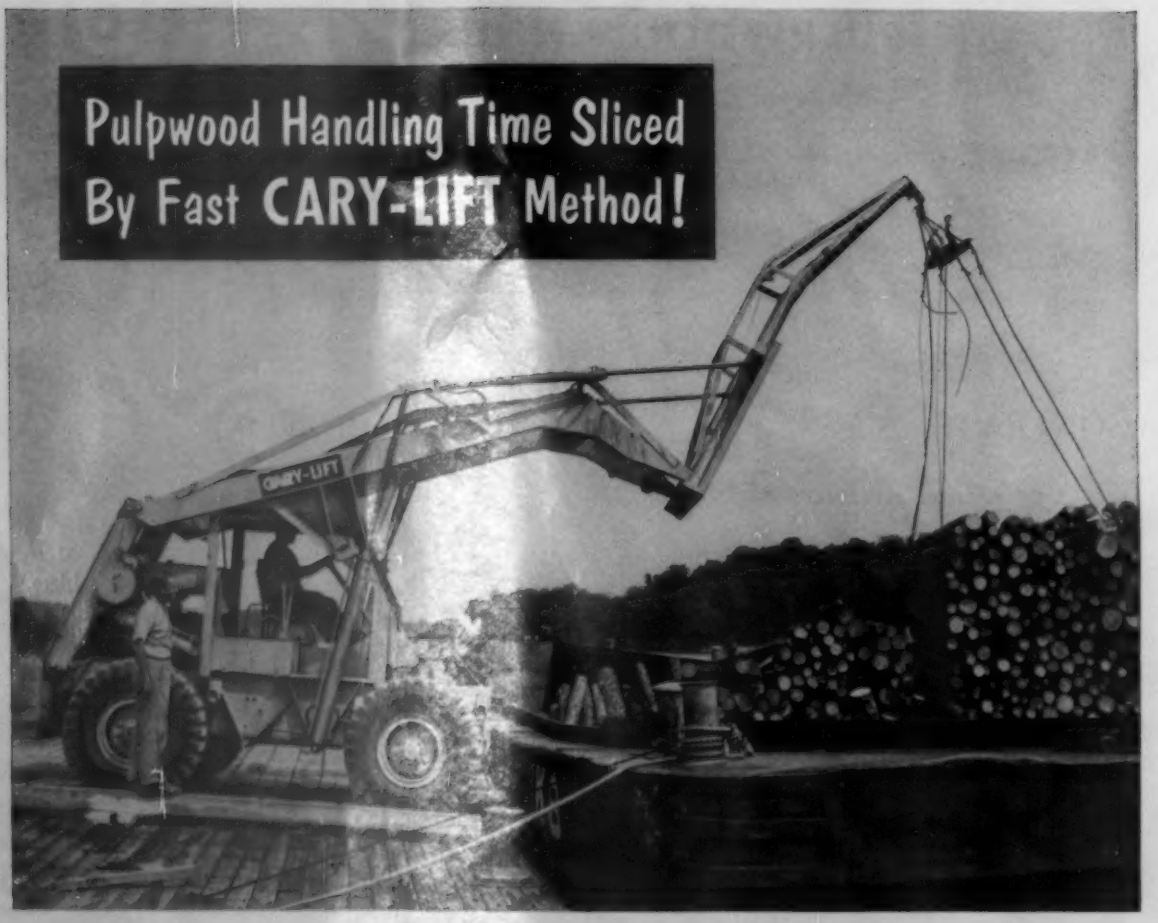
Pulpwood Handling Time Sliced By Fast CARY-LIFT Method!



Loading 100 cords every 8 hours 600 feet from ground storage racks—that's what *each* of 3 Pettibone Cary-Lifts does for Bowaters Southern Paper Corporation in Soddy, Tenn. Other Cary-Lift models unload and load railroad cars and trucks and deck in minutes—on rough or smooth terrain, in mud or snow! Moves rail cars, too. Interchangeable fork (with or without baler) plus snow and other buckets add to versatility. Ask about the money-saving advantages for your operation—Bulletin P185.

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APA Salutes . . .

H. E. BRINCKERHOFF

Acting Secretary: 1934–1935

Executive Secretary: 1939–1952

Little thought was needed to decide on the person to whom the PULPWOOD ANNUAL should be dedicated. The obvious answer is H. E. Brinckerhoff—or "Brinck," as he is affectionately known to his host of friends in the Industry.

Brinck's forestry career, which started with his graduation from the Cornell Forestry School in 1906, was interrupted by World War I. From this, Brinck emerged a First Lieutenant, after having served as a combat officer with the First Infantry Division in France. The score of years that followed were devoted to consulting work, and to practically every phase of pulpwood forestry and logging both in the United States and in Canada.

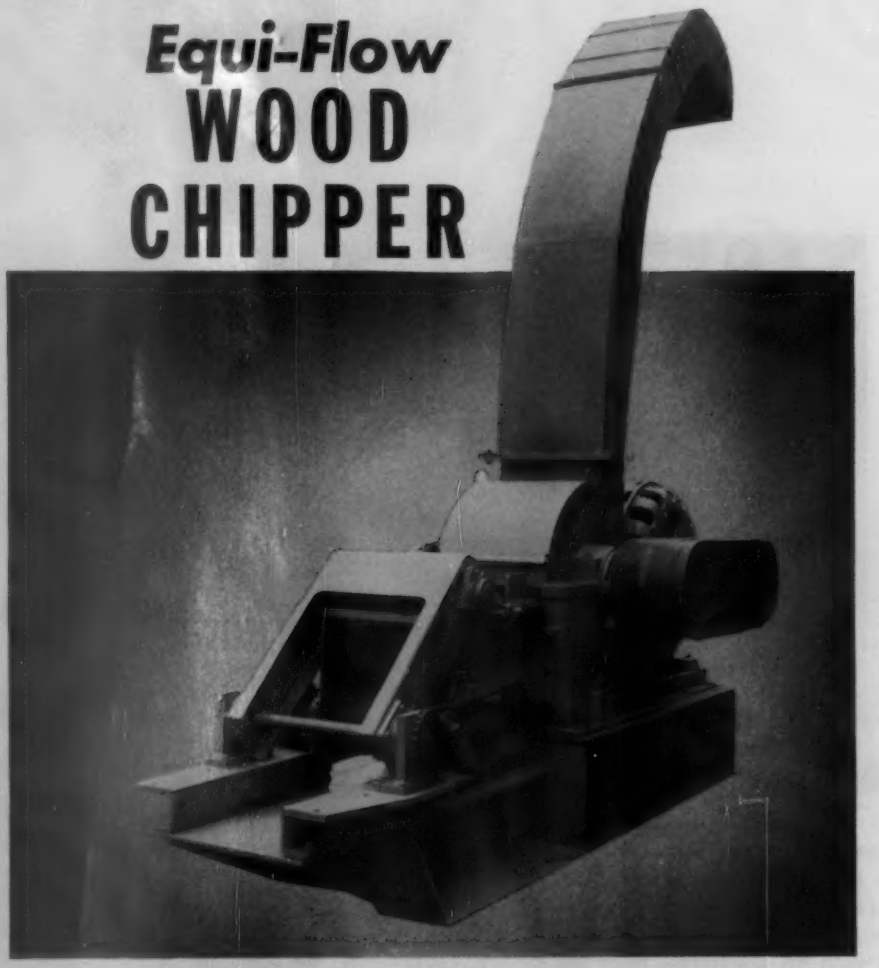
Brinck was assigned the job of Acting Secretary of the newly formed American Pulpwood Association in 1934. When a permanent Secretary was found, Brinck returned to Canada, only to be recalled to the Association in 1939, bringing with him a 30-year background of forestry experience.

For thirteen years, until his retirement in 1952, Brinck devoted his untiring energies toward building a strong Association to represent this Industry. He imbued those priviliged to work with him with his own devotion to the job, his loyalty to his associates, and his moral and intellectual honesty, which were reflected in his every service. His were the guidance and the forethought that laid the foundation upon which the Association now stands. That he performed well is reflected in its position today.

We salute you, Brinck. And may these few words convey to you our appreciation and affection.

IMPCO

Equi-Flow WOOD CHIPPER



This "drum chipper" is used primarily to produce pulp mill quality wood chips from slabs, cants, edgings and small diameter round wood. Its weight and size economy with 10" x 16" spout opening make it especially adaptable to portable or mobile use. This is a high speed machine, handling from ten to fifteen cords per hour with its automatic continuous horizontal feed. Send for Bulletin F2-1 for a complete description of this new unit.

IMPROVED MACHINERY INC.
NASHUA, NEW HAMPSHIRE

Sherbrooke Machineries Limited, Sherbrooke, Quebec, manufacture similar equipment in Canada.

Training, Safety and Supervision

PANEL MEMBERS (left to right): T. N. BUSCH, International Paper Co., R. F. BOWER, Hammermill Paper Co., discussion leader, JOHN MAINES, Great Northern Paper Co., G. A. PESEZ, International Paper Co.

"It's Not the Axe, It's Joe"

Safety training film on proper axe use, due to contributed time and talent, made at one-twentieth usual cost

By JOHN MAINES
Great Northern Paper Co.

● The film entitled "It's Not the Axe, It's Joe" was produced by the American Pulpwood Assn. and the Northeast Safety Film Committee as an experiment in amateur film production. The safety film project was financed by contributions of fourteen of the major pulpwood-producing companies in the Northeast, and the Northeast Safety Film Committee was appointed by the chairman of the Northeast Technical Committee of the American Pulpwood Assn. Two films have been produced, one on winter hauling in the Northeast, and a second one, on the use of the axe. The axe film is a 16 mm sound, color movie that runs for approximately 12 min.

The idea for the film came from Bill DeRosier, logging engineer for the American Pulpwood Assn.; J. Omar Lang, employment manager and safety engineer for Woodlands Department of the Brown Co.; and Vic Beaudoin, photographer for Brown. Their basic idea was to produce something new in the way of training films and to feature one thing at a time such as axe, power saw, tractor, etc., in a series of short events which would carry an effective message to the pulpwood cutter. With the exception of the photography, which has been very ably done by Vic Beaudoin, this film is non-professional and is an experiment to see if an effective safety film could be made by amateurs who are familiar with the causes of accidents in the woods. In the Northeast the mis-use of the axe results in more accidents than for any other hand tool, and for this reason the axe was chosen for this first film.

SCENE FROM APA safety film

The film might be described best as a series of moving slides portraying some of the accidents taken from our accident record files and caused by the improper use of the axe. No attempt has been made to cover the entire field of safety in axe use and the film simply brings to light some of the more common mistakes that are made.

The cost of this film is just under $550. This cost includes one 16 mm Kodachrome print. However, it does not include some travel expense and time which has been donated by the American Pulpwood Assn. and the companies concerned. A second reason for this very low cost is that sound strip film and a magnetic recording projector were used in its production. This, together with the contributed time and expense and the generous use of home talent, resulted in a cost of about $1.25 per foot, which compares with the $20 to $30 per foot minimum cost of producing a professional film. A recent report on a study of 157 business films called "The Dollar Sense of Business Films" published by the Association of National Advertisers' Inc. shows that the median cost of these business films was $25,800 or $1,166.00 per minute of showing time.

Our purpose in making this film was to teach our woods workers to play it safe and reduce the number of accidents, and by so doing to increase their productivity and earning power. This in turn will lower our compensation insurance rates and reduce the cost of pulpwood production.

This film, together with our winter hauling film, will be used by the sponsoring companies during the present hauling season and after it has been shown to our woodsmen, it will be decided if we want to go ahead with more film of the same type. Both an English and French version of this film is being produced, since a number of French-speaking woodsmen are employed in the Northeast.

How to Use Chain Saws with Safety

Rules and guides for safe handling of power chain saws for felling and for fire prevention

By G. A. PESEZ
International Paper Co.

● During the past ten to fifteen years, the advent of the chain saw has had a great impact on the logging industry of this country. Chain saws were first used in the Northwest, but their use quickly spread to other logging regions, particularly to the Northeast and the Lake States. In the South, where power saws of the circular type mounted on wheels have proven very successful, chain saws are now being used more and more.

The first chain saws made were of the two-man type and weighed up to 100 lbs. each. While many of these are still in general use in the Northwest where the timber is large, in the other logging regions they have been largely replaced by the lighter one-man saws that weigh from 25 to 30 lbs. and develop up to 5 hp. It is about these one-man saws, that these comments apply.

At present, in the Northeast, it is estimated that about 85% of all felling and bucking is done with power chain saws. The bucksaw is rapidly becoming as rare a sight in the woods today as it was a common sight just a few years ago. All but a very few of the old die-hard lumberjacks have been won over by the chain saw. The reasons are quite obvious. Daily production by workers using chain saws can be increased by at least 30%, and this increase in production is accomplished with considerably less effort on the part of the worker than when he toiled with a bucksaw. Once a man has used a chain saw he rarely goes back to the bucksaw.

The change-over from bucksaws to chain saws was not accomplished overnight. In contrast to such simple tools as the axe, bucksaw and crosscut saw with which the lumberjacks were thoroughly familiar, the chain saw is a highly complicated piece of equipment. It requires a certain amount of training and skill to manipulate successfully and maintain in good repair.

As a great majority of the workers who were to use chain saws had very limited experience with mechanical equipment of this nature, the problem of training the men in their use and maintenance was a major one. Most of the large companies sent experienced operators into the camps to demonstrate the proper techniques in the use and maintenance of the chain saw. The men selected for training others were careful workers, mechanically inclined, and well versed in felling and bucking. In this way many workers received good training and they in turn passed on their knowledge to others. Thus many loggers quickly became proficient in the use of the chain saw and their earnings rose rapidly. Our own Association, through its Safety and Training Officer, played a most important part in this educational program, at which time the safe use of chain saws was fully brought home to the workers.

In addition to having to learn a great many things about the proper use, maintenance and care of their chain saws, the workers also had to learn to respect it, since it can be a dangerous tool when proper caution in its use is disregarded. The fast-running chain which cannot be guarded is a constant hazard.

FELLING WITH CHAIN SAWS—Although felling with a chain saw is essentially similar to felling with hand saws, the one important difference is the rapidity with which a chain saw cuts. It is, therefore, highly important from a safety point of view that the faller should have his get-away route well planned in advance and cleared of limbs, brush and other obstructions so that he can speedily retreat to a safe place when the tree starts its fall. Fallers should always shout a warning to make certain that no one else is in the danger area before the backcut is started, since cutting proceeds so rapidly that waiting to call out just prior to the tree falling may be too late. It is most important to shout this warning before the saw is started, as the noise of the running saw may drown out a warning cry. When working with a companion, it is recommended that a few simple hand signals be devised. In this connection, it would be very helpful if the various chain saw manufacturers could develop a loud mechanical whistle which would be incorporated in the chain saw motor and which could be blown by the operator at the proper time before the fall of the tree.

GOOD FELLING PRACTICE—In using the chain saw, whether in felling or bucking, the bumper plate should always be tight against the tree when starting the cut. If this isn't done, the saw will be pulled in with considerable force as the teeth engage in the cut.

When a tree larger than the guide bar is to be felled, a fanning sweep with the saw is made from one side, then the saw is carried around the tree, turned over, and a similar sweep made on the other side. At times, it may be necessary to make three sweeps on an unusually large tree. In this particular case, the first cut is made at the back of the tree like an ordinary back-cut, and the other two cuts are then made, first from one side and then from the other.

It is very important that when wedging is necessary, that only wooden, aluminum or magnesium wedges be used in back of a saw. Not only can a steel wedge ruin a chain, but there is the danger that flying steel splinters scraped off by the teeth may put out an eye.

Small trees from about 12 in. on the stump, and less, can usually be pushed over by hand in the direction desired. Often no undercut is made at all, but it is a good idea to make a nick with the chain saw blade to guide the direction of fall and to prevent splitting.

A push pole is a valuable aid in getting these trees down, and in preventing strains to the helper and possibly his falling into the saw. Pushing should always be done from the hip or shoulder, never from the chest, stomach or groin.

SAFETY IN CHAIN SAW USE—The following are some safety rules for chain saw operators:

1. Never crank a saw with the motor resting on the knee; always place the saw firmly on the ground.
2. Never have the chain in motion when standing or walking close to another person.
3. Never have the chain in movement when walking from one cut to the next one. You may trip and fall on the running chain.
4. Use wedges to help control felling and prevent binding. When bind-

ing does occur when felling or bucking, be careful not to endanger yourself in trying to disengage the saw.

5. Always get on solid footing when operating the saw.

6. Keep the chain well filed. A dull improperly filed chain can cause the saw to buck and jump, and result in an accident.

7. Never allow a saw to get too hot. This can cause severe burns and serious damage to the saw.

8. Handle the chain cautiously, as severe cuts can be inflicted by a sharp chain.

9. When notching is done with the chain saw, it should be done properly, as careless and improper notching might cause the tree to fall the wrong way.

10. Watch for dead branches and tops.

NORTHEAST RULES—In addition to the above, the National Safety Council prescribes the following rules, particularly adapted to Northeastern conditions.

1. When transporting chain saws in trucks or cars, suitable racks or guards should be used. These protect the saw itself as well as the men riding with it. Sometimes tieing the saw down is necessary to prevent shifting.

2. When the undercut is completed, after the back cut is completed, or when the saw is to be moved from tree to tree, the chain should be stopped.

3. The chain should not be started until the saw is in position, ready to cut. Then the engine should be held solidly against the tree or log before starting to cut to prevent the saw from jerking or jumping.

4. The man at the engine end should keep his body in contact with the frame while the saw is cutting. Then, if the saw binds and kicks back, he will be pushed and not struck.

5. Cuts from the running chain are the most frequent and serious kind of accident. To prevent these, fellers should stand at the ends of the saw, never at the side; and every precaution should be taken to make sure that crew helpers do not fall into or brush against the running saw.

6. The felling of a tree by a chain saw consumes so little time that ample warning should be given to other men before the back cut is started. Because of this speed, the bucker must also foresee what is going to happen when the cut is completed.

7. Buckers may find it necessary to block the tree before bucking to prevent it from falling or rolling when the cut is finished.

8. With 1 man saws, care is needed before starting to make certain the chain is not touching anything.

9. When back cutting, the feller must also be sure he does not cut all the way through into the notch with the outer end of the saw blade.

10. The exhaust on gasoline saws should be directed away from the operator.

11. The operator should pull the starting rope away from his body. He should never wrap it around his hand.

12. Fellers and buckers should wear hard hats to prevent head injuries. Good sharp-caulked boots, hob-nailed shoes, or rubber soles should be worn, depending on the timber and the season.

FIRE PREVENTION RULES—It is definitely known and generally recognized that chain saws are a fire hazard in the woods, when fires can be started. For this reason, prevention against fire must be taught the operators of chain saws and the following rules have been formulated.

1. Do not spill fuel on the ground or on the saw.

2. Use a gas can with a safety pouring spout or a funnel when fueling.

3. Do not smoke when fueling or at the point where gasoline is kept.

4. Do not start the saw at the place of fueling.

5. Keep the muffler on the saw in good condition and free from excess carbon.

6. Keep the saw clean of sawdust and of inflammable material.

7. Always follow the manufacturer's recom[illegible] for the breaker gap point [illegible] the gap is set too close the te[illegible] the exhaust gases may b[illegible]ough to ignite dry moss [illegible]ffler is held close to the [illegible]

8. [illegible]nguisher with the saw a[illegible]ing the summer season.

9. D[illegible] the motor to run too hot.

10. Cl[illegible]w often for gas leaks.

11. Cl[illegible] electric wiring for worn and [illegible] wiring and poor contacts.

12. Never allow gas or oil in the men's living quarters.

Handle Safely

A chain saw starts fast—cuts fast. Tops in efficiency and elementary in move towards mechanization of production of pulpwood, the chain saw must, nevertheless, be handled with strict observance of safety rules.

Our industry is fortunate indeed to have such a useful tool at our disposal today as the chain saw. It has given our woods workers an opportunity to earn higher wages more easily through increased production. It has been instrumental in attracting to our industry many young men with mechanical aptitudes. It has given them more stability as owners of an important piece of mechanized equipment. Constant training in the efficient and safe use of these tools must be always available to the workers. Through our Association's Safety and Training Officer, its Training Guides on "Use and Care of Power Saws" and "Power Saw Operators Notebook," which are soon to be released, we have an excellent means of acquainting our workers with the best techniques of chain saw maintenance and safety.

New Method Revolutionizes Loading Logs Onto Rail Cars

INTERNATIONAL DROTT TD-18A Log Rack lowers freight charges, takes two less men, unloads trucks six times faster for Montana logger.

Four different life-saving, money-saving and time-saving improvements in log-loading operations have been made by Rossignol Logging Co., Missoula, Montana. The company realized these savings simply by switching from a skid-mounted stationary loader to an INTERNATIONAL DROTT TD-18A Log Rack.

Here's how the TD-18A crawler, fitted with a DROTT Log Rack that lifts 9,000-pound log loads, has revolutionized the Rossignol operation:

1. **REDUCES MANPOWER 66%,** because the new method is a one-man operation, whereas a loader operator and two tong-setters were needed formerly.
2. **UNLOADS TRUCKS 83% FASTER,** requiring only 5 minutes compared to the 30 minutes needed by the old loader. Time lost under old method was even greater if a second truck came in while the first was being unloaded.
3. **ELIMINATES TRUCK TIE-UPS** at the siding, since the new unit simply unloads trucks and stockpiles logs when no railroad car is available. Old loader had to move logs directly from trucks to flat cars.
4. **ENDS DEADLY DANGER** that logs will topple down on worker releasing hold-down chains on haul trucks—a job that used to be the most deadly in logging. Now Log Rack steadies logs above truck stakes while worker releases chains in complete safety.

Production on the logging operation 60 miles east of Missoula averages 60,000 board feet daily. All the logs cut and trucked each day are loaded onto railroad cars in six hours or less by the INTERNATIONAL DROTT TD-18A Log Rack.

Take a long look at your mechanization setup and you'll find that you, too, can derive multiple benefits from one of these INTERNATIONAL DROTT units. See for yourself by calling your INTERNATIONAL Industrial Power Distributor for your demonstration. DROTT Log Racks are available for INTERNATIONAL TD-6, TD-9, TD-14A and TD-18A crawlers. Name the one you want to see in action, and a demonstration will be arranged at your convenience.

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

DROTT MANUFACTURING CORP., MILWAUKEE 8, WISCONSIN

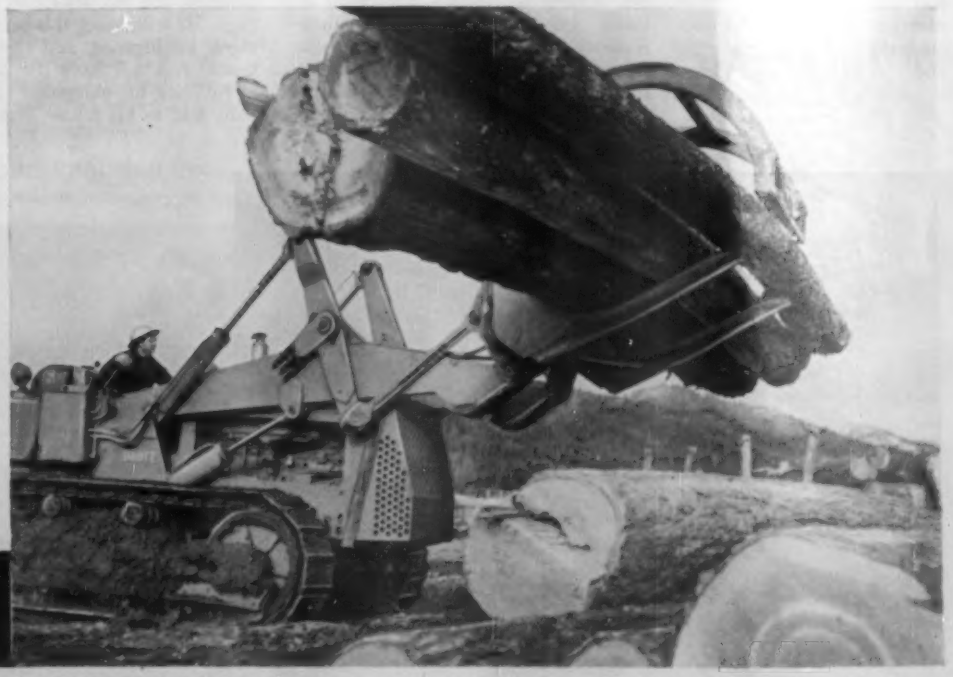
LOG RACK holds top logs steady while workman releases chain in absolute safety. INTERNATIONAL DROTT unit unloads trucks in 5 minutes—an operation that used to take 30 minutes with the old skid-mounted loader.

INTERNATIONAL HARVESTER

INTERNATIONAL DROTT

MORE THAN 8,000 LOG FEET are loaded on car in 30 minutes. Single loads up to 2,100 board [illegible] are handled by INTERNATIONAL DROTT TD-18A Log Rack owned by Rossignol Logging Co.

Don't be careless!
Save our forests!



STOCKPILE OF LOGS is built up by unloading trucks when no flat cars are on siding. Loader quickly selects long or short logs from pile to stack load solidly on flat car when it arrives.

How to Develop Safety Training

Importance of management activity and interest in proper development of safety training programs

By T. N. BUSCH
International Paper Co.

• A review of various publications by the National Safety Council and U. S. Department of Labor indicates that logging and underground mining have the highest accident severity and frequency rates of any major industry in the country, and that the communications industry has the lowest rates.

The degree of severity and frequency of accidents does not necessarily denote the irreducible minimum for a given industry or occupation, but is dependent on such factors as:

1. Lack of interest in safety.
2. Large number of small firms or operating crews engaged in logging which individually cannot finance or apply a formal safety program on their own. They produce the major volume of the forest products and the major number of accidents.
3. Lack of realization as to the full cost of accidents.
4. Lack of realization that accident prevention is primarily dependent upon the safety mindedness of management and men.

Safety must be more than a promotional program of slogans, posters, meetings and contests. These are important, but must be supplemented by intensive individual contact so that the employe can incorporate safety in his daily activities. Detailed instruction and persistent pressure is needed which requires training to increase the employee's effectiveness and develop safe work habits.

In order to properly train workers you must have competent supervisors who can instruct, demonstrate and check the worker on the job with sufficient frequency and intelligence so that his men are constantly improving in their work. There is a vast difference in effectiveness when a supervisor merely tells his men or when he trains or supervises them.

We now get to the top of the subject. That is—Top Management.

It is apparent that the major work in safety and training will have to be done by the regular organization in the smaller firms or groups, but in the final analysis, the head man or top management must recognize training and safety as being just as important as cost, quality and production of a given product.

The APA has field men in various sections of the country who can and are willing to provide assistance in safety and training programs in their respective areas. Most pulpwood companies already employ safety and training specialists in the manufacturing plants, and it may be possible to enlist their aid and advice in putting a sustaining safety program across in the field which is tailored to fit the forester's needs.

By really getting down to work, the management of a forest product division employing over 350 men has reduced the accident frequency rate by 50% and the severity by 75% in 1954, against a similar six month period in 1953, and is still maintaining a fine record by sustained effort.

Aside from the humanitarian standpoint, this division is also showing substantial gains in production, quality of work and improved morale of the employees.

The main thing to remember is that the quality of safety and training is primarily dependent on the man at the top, and if he is an efficient manager he will be safety minded and govern his administration accordingly, if for no other reason than that it simply pays to do so.

If he is an efficient manager, he will also know how to avail himself of competent advice and guidance from the APA and the National Safety Council, 425 No. Michigan Ave., Chicago. He will attack this problem with vigor, intelligence, and sustaining interest, and will have the satisfaction of fulfilling his obligation to his company and to his fellow man.

Loggers Learn

Safety and training programs for pulpwood production are conducted by APA, and advice and guidance is also available from the National Safety Council. This is a typical field demonstration.
Photo: Courtesy International Paper Co.

Wood Preparation, Handling and Hauling

PANEL MEMBERS (left to right): D. W. SOWERS, JR., West Virginia Pulp & Paper Co., R. C. BARIENBROCK, Mead Corp., discussion leader, M. J. QUINN, Brown Co., E. C. MELCHER, S. D. Warren Co.

To Rent or Buy Heavy Equipment?

Discussion of the costs and economies of rental vs. ownership of heavy woods equipment

By M. J. QUINN
Brown Company

● The necessity of acquiring the correct kind and type of heavy equipment is a constant problem in woods operations, and the general subject of "Rental vs. Ownership" of such heavy equipment commands a reasonable degree of interest.

Considering this only as it applies to woods operations, I think we can reasonably place all heavy equipment in one of two categories.

PART-TIME EQUIPMENT—First, heavy equipment necessary to carry peak work loads, considered part-time equipment, owned, maintained, and operated by others such as distributors, large and small general contractors and farmers. Each contributor furnishes from one to two or three pieces of equipment. During the seasons of peak work loads, usually the fall and winter months, it is economically sound to rent the necessary heavy equipment as trucks, tractors, cranes, etc., as requirements demand. Upon completion of the woods work the owners return the equipment to their own specialized field to further gainful employment. This arrangement works for the mutual benefit of both operator and owner and is looked upon with favor throughout the industry. It allows the owners work for the equipment during nominally slack [illegible] and offers the woods operation [illegible] of heavy equipment, operation [illegible] maintained, without the usual [illegible] of tying up large amounts [illegible] capital.

TO BUY OR RENT—That is the question with heavy equipment.

FULL-TIME EQUIPMENT—Second, heavy equipment necessary for full-time operations, the minimum amount or number of pieces of heavy equipment usually owned, maintained and operated by the pulpwood producers. Today, one of the fastest growing businesses in the United States is the leasing or renting of heavy equipment. This business parallels, but is somewhat distinct from, the car rental business in that the equipment is tailored distinctly to fit the customer's needs. Further, the diversification of the equipment offered runs all the way from aeroplanes to wagons. A few of the ideas that have stimulated the growth of this business are:

1. The rising costs of ownership and operation.
2. Conserving of capital for more productive use.
3. Elimination of complicated accounting records.
4. Avoidance of speculating in the used equipment market.
5. The tax angle.

My employer, Brown Company

Woods Department, for the past several years has operated its truck fleet under a rental agreement with R. S. Robie U-Dryvit System, Boston.

In this agreement, the Brown company pays all driver costs. For the trucks themselves the company pays a weekly standby charge made up of the fixed costs such as depreciation, storage, garage service, fueling and painting, profit on investment, excise tax, registration fee, fire and theft insurance, finance charges and public liability, property damage and collision insurance. Further, for the operation of the equipment the company pays a rate per mile made up of the variable costs such as gasoline, oil, grease, anti-freeze, chains, and tires.

The representative charges for some of the equipment in use by Brown Company are about as follows:

Truck	Standby charge per week	Rate per mile
Mack, Heavy duty—Model A-40-S	$67.40	.232
Mack, Heavy duty—Model A-50-S	67.40	.232
G.M.C., Heavy duty—Model HCW 724	67.40	.232
G.M.C. Model HDCR 752 (complete with trailer)	93.70	.16

This arrangement, for about 25 pulpwood hauling units, I feel has worked out to the mutual satisfaction of both the rental company and Brown Company. The equipment is kept clean, well serviced and maintained. Service over the road is of the same high order. Replacements are provided within a reasonable time limit in the event of fire, theft or mechanical breakdown.

This arrangement, of course, costs a great deal of money. And it likewise costs a great deal of money to own, maintain, and operate your own fleet. We all know that it is economically unsound to own equipment unless it is kept in full use. With the seasonal limitations in woods operations I think, based on my observations and experience at Brown Company, that there is a definite economical basis for rental of this equipment. I feel that the practice of acquiring heavy equipment through rentals from large suppliers will spread from trucks to tractors, cranes and other heavy equipment throughout the industry.

A Yardstick for Mechanization

Some ideas and statistics on how to compare one woods operation with another, to judge mechanization

By E. C. MELCHER
S. D. Warren Co.

● How do you compare one woods operation with another? What is 100% mechanization and how do you rate the degree of mechanization on one job to another? When we say a job is fully mechanized, just what do we mean? These are difficult questions to answer.

WHAT IS "MECHANIZATION"?—There are many kinds of mechanized operations over the different regions. My thought is to suggest some set of standards by which the degree of mechanization might be measured. In order to do this I have to use our own jobs as an example, as I am more familiar with them.

We have an operation about 40 miles from our mill where we produce 4-ft. hardwood pulpwood. The tree is felled by power saws, twitched by tractor to a sulky haul road, hauled to the yard located on a truck road by tractor and sulky, sawed in a slasher mill into 4-ft. lengths, placed in pallets which are loaded by power from the truck, trucked to our mill where the side of the pallet is tripped and the wood rolls into the mill conveyor.

In order to classify the component parts of this operation, it might be broken down as follows for possible standards:

1. Felling—Use of powered saw: 100%.

2. Skidding or hauling to truck road: Use of tractor or cable skidding: 100%. (Animal power considered 50%.)

3. Sawing or Bucking—Use of powered saw: 100%.

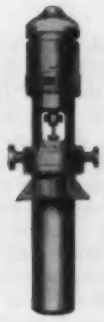
4. Loading—Use of any engine or motor power to lift pulpwood to vehicle: 100%. (Use of non-powered device to load pulpwood or logs to be regarded as 50% mechanized if manpower does not exceed 80 lb. lift.)

5. Hauling—Use of any machine or water power to transport pulpwood by bunch, piece or load: 100%. (Use of animal powered hauling can be considered as 50% mechanization if loading is done by power or otherwise than manpower.)

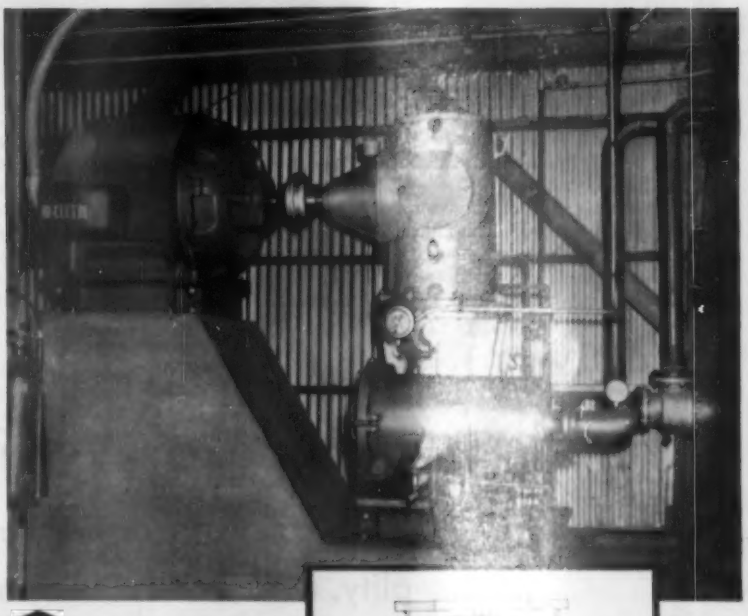
6. Unloading—Same as loading: 100%.

TRUCKS, LOADERS, SKIDDERS—All are part of total mechanization.

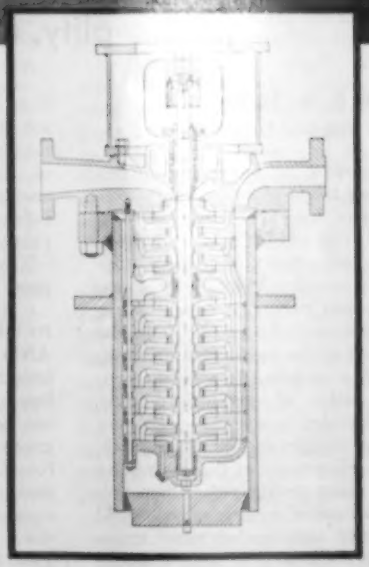
I-R multi-stage vertical pump provides 1500 lb. pressure for LOG DEBARKING



at HARRIS PINE MILLS



Ingersoll-Rand 11-stage Class VHTB pump in hydraulic debarking service at Harris Pine Mills, Pendleton, Oregon. Driven by a right-angle speed-increasing gear at 4400 rpm, this unit is rated 350 gpm, 1500 psi discharge. Intake strainer is shown in lower foreground.



Cross-section of Class VHTB pump. Each stage consists of impeller, combined diffusor and channel piece, and renewable wearing ring. Since each stage is a complete pump in itself, the design is extremely flexible and readily adaptable to a wide range of operating conditions.

IN stripping the Bark from lumber mill logs the hydraulic method saves much time and effort. But it's tough service for pumps—requiring high pressure as well as dependability and freedom from costly shutdowns of the debarking operation.

At Harris Pine Mills, in Pendleton, Oregon, the Hansel Engineering Company solved the problem satisfactorily with the installation of an Ingersoll-Rand Class VHTB 11-stage centrifugal pump. This vertical-type unit delivers 350 gallons of cold water per minute at 1500 lb. It is motor driven through a right-angle step-up gear which gives the pump an operating speed of 4400 rpm.

In the VHTB pump, there is no radial load on the shaft; and hydraulic axial thrust is reduced to a minimum by the opposed arrangement of the impellers. Piping connections are straight through and in-line, and there is only one stuffing box. These factors contribute to exceptional dependability as well as ease of installation and servicing. Ask for I-R pump specialist for complete details, or write for Bulletin No. 7096.

Ingersoll-Rand

Cameron Pump Division
11 Broadway, New York 4, N. Y.

10-141

GAS & DIESEL ENGINES • AIR & ELECTRIC TOOLS • COMPRESSORS • PUMPS • TURBO-BLOWERS • VACUUM EQUIPMENT

RATING A JOB—The use of manpower to lift or unload sticks of pulpwood in any one of the above operations would automatically cut the degree of mechanization. By the above standards, we can perhaps rate the steps of the woods operation. Let's apply them to our own mechanized job.

1. Felling—We drop and trim tree in tree length with power saws, so this part rates 100%.

2. Skidding is by tractor to sulky haul road and thence by tractor and sulky to slasher mill. This rates 100%.

3. Tree is sawed into 4-ft. lengths with modernized drag saw, rates 100%.

4. Wood is placed in pallets by manpower. Pallets are below ramp so that there is very little lifting. Pallets are loaded by power. While this is less than an 80 lb. lift, let's call this 50% mechanized.

5. The trucking is, of course, mechanical and rates 100%. The unloading is done by tripping one side of the pallet which allows the wood to roll onto a sloping ramp and then into the conveyor. While all of the wood does not roll out, all the driver has to do is roll the remainder with a picaroon, no lifting. This should rate 100% I think.

While we have rated the separate steps, we have not rated the job as a whole. It seems to me the only way that this can be done is to rate each step in relation to the whole as the cost per cord of each step relates to the whole cost. When we do this, we arrive at the following:.

	Rating	Cost	Mechanized
1. Felling	100%	16⅔%	16⅔%
2. Skidding	100%	32%	32%
3. Sawing	100%	13⅓%	13⅓%
4. Loading	50%	9%	4⅓%
5. Trucking & Unloading	100%	29%	29%
		Job Rating	95⅓%

This is presented as a possible means of rating the degree of mechanization. We don't pretend to be experts and are merely offering this for your consideration. After looking at this method of rating, it is surprising how many jobs are 50% mechanized or better, even the small producers.

Our own job could be 100% mechanized by placing a short conveyor at the end of the mill. This, however, would increase the cost of moving and we want simplicity on the job. Cable skidding could easily be a 100% mechanized job, and a stump cut job can be nearly so. It seems to me that the degree of mechanization desired depends on volume and costs. A high degree of mechanization with heavy equipment will only pay off on large volumes, but small producers can be mechanized with smaller equipment. Most small producers have a power saw, small tractor and a truck.

THREE FACTORS—In mechanization three factors must be attained: (1) Reduced costs. (2) Higher production per man day to conserve labor. (3) Mechanical equipment be used so that it is not destructive to forest growth.

These three are important and, in my opinion, can be obtained by the proper degree of mechanization and proper planning and supervision.

What is Influence of Weight Scaling?

How weight scaling incoming pulpwood loads increases wood quality, reduces friction between producer and mill

By D. W. SOWERS JR.
West Virginia Pulp & Paper Co.

● A number of interesting discussions have taken place, and enlightening papers have been presented at regional Technical Committee meetings on the subject of buying pulpwood by weight. Most of these discussions and papers, it seems to me, have dealt with the subject from the standpoint of the mechanics of installing such a system. Selecting a converting factor of cords to pounds, types of scales to use, or method of recording weight and checking on it, and the advantages to the consuming mills of using weight rather than volume as a basis of measuring pulpwood loads, have commanded more attention than the subject of what it would do to pulpwood production. Some views on this latter have of course been expressed, as they have been observed by men from those mills who are now buying wood by weight.

An attempt is made here to look at the subject of weight scale primarily from the producers' point of view, and see how weight scale has affected production, if any. After a thorough study of the matter, it appears that the answer to the question, "What is the influence of weight scale on pulpwood production?" consists of just one word —"Good." Or maybe two words—"Very good."

RELATION BETWEEN WEIGHT AND YIELD—I would like to say here that most, if not all, of the mills buying pulpwood on a weight basis are interested in getting fresh-cut, green pulpwood, and that they have found a direct relation between weight and yield. Oak, for instance, weighs considerably more per cubic foot than does yellow poplar. And the pulp yield from oak is likewise considerably higher than that for poplar.

UNIFORMITY OF SCALE—Probably one of the first things the producers learned about weight scaling of pulpwood was that the weight scale is entirely and completely impersonal. It has no friends, no enemies, no family troubles or past due bills to worry about while it is doing its job of measuring a load of wood. Therefore the producer can bring his load of wood to the millyard any time of day or night, and be sure of accurate, impersonal measure. He does not have to get in early this week in order to "hit" the good scaler or wait until late next week because the shift has been changed and the "sour" guy is scaling early this week.

The amount of void space of cull in a load of wood is a matter of judgment, even with the most experienced scaler. And we all know that judgment can be greatly affected by the frame of mind of the person exercising that judgment. Likewise, scalers themselves will tell you that it takes a strong man to withstand the pressures brought to bear on him by the many persons and many conditions met in scaling a load of wood.

And the producers know that scalers are subject to these pressures, and are always suspicious as to how they may

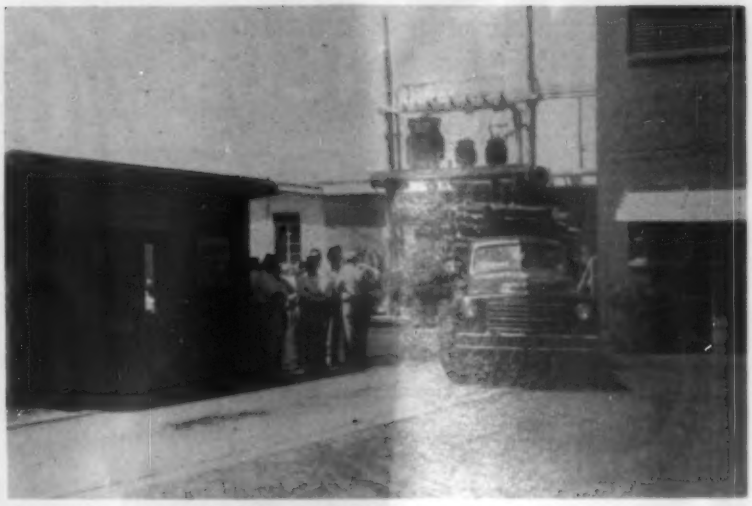
be faring under such a system. One mill reports that when the weight scales were down for repairs, the producers were reluctant to accept stick measurement for their wood, as they once had.

So the producers have found that similar loads will not vary widely when scaled by weight, as they often did when scaled by volume. They can now schedule their operations and deliveries without regard to who is on duty at the scalehouse.

QUALITY OF WOOD—Under the volumetric scaling method, the producer who always manufactures good wood, and loads it properly, received little if any more for his load than did the producer who prepared only average quality wood and built up his volume by skillful placing of the sticks on his load. Under the weight scale system, however, the producer does not get paid for air space, and gets more money for wood of good quality, i.e. large, straight, green sticks of heavy density species, than he does for small, crooked, sap-rotted wood or wood of low-density species. In other words, producers have found that good quality wood brings a higher price. They have learned what type and amounts of wood brings a good return, and they are furnishing that type of wood.

Occasionally a man might be clearing up a woodlot for pasture or salvaging tops and smaller trees from a logging operation, and he will bring in a load of that type of wood and receive less for it than for a load of green, large, straight wood. Mills buying such material say that there is no complaint on weight scale as there used to be on volume scale, because the producer realizes he has neither the quality or amount of fiber that there is in a load of high quality wood, and agrees that he has received just what his load is worth.

SPEED AND ACCURACY—Weight scaling is much faster than volumetric scaling. One mill which often had a long line of trucks waiting to be stick scaled when they were buying 100-125 loads a day, now handles up to 200 loads a day nicely, and have put through their yard 320 trucks in one 16-hour period, an impossibility before they went to weight scaling. This speed-up in the yard is very pleasing to the producers and truckers and has been of dollars and cents value to many. It has enabled them to make another trip a day, giving them more loads for their truck and thereby reducing hauling costs.



VOLUMETRIC OR WEIGHT SCALING? Arguments for both.

Length of stick is of no concern, within reason, to either the mill or the producer, when pulpwood is scaled by weight. Again, the producer gets paid for just what he brings in, not for what the scaler thinks or estimates is on the load.

With volumetric scale, the mills specify that pulpwood shall be cut in lengths of 48, 52, 60, 63, or 100 in. If a load comes in that contains sticks either longer or shorter than specified lengths, or with sticks of varying length, two things usually happen. First, it just doesn't look good to the scaler, which brings to bear on him one of the pressures we mentioned above. And second, in order to arrive at a scale for the load, the scaler must resort to "sampling," that is measuring the length of a few sticks that can be seen, then giving the average of these few sticks as length of all sticks on the load. This of course may or may not be satisfactory to the producer.

SAVING MARKING TIME—Because of the important part length plays in stick-scaled wood, the producer often has one man to mark the trees as they are limbed, or the sawyer will have to take time to mark the sticks off on the tree before he bucks it up. Weight scale, however, does not have to be of a certain definite length, or [illegible] be the same length. There is no inspection for such things. The [illegible] can either judge the length [illegible] accurately enough as he cuts [illegible], or can measure it with[illegible] acceptable tolerances [illegible] that marking time is elimi[illegible] largely so. While many may [illegible] reduction of marking time [illegible] very little costwise, it has [illegible] efficiency and reducti[illegible] preparing pulpwood is not [illegible] much by making one bi[illegible] there as by combining a [illegible] small savings here and ther[illegible] about the operation.

Such [illegible] small savings which can be made in production for weight [illegible] reduced time in the yard, reduction of loading time as appearance of load does not figure in the returns, and reduction or elimination of marking time, all cause the producer to favor weight scale over stick scale.

To sum up, then, weight scale has resulted in better quality wood being prepared, increased the confidence of the producer in the uniformity and accuracy of scale, has eliminated the friction between producers and mill personnel at scalehouse, has reduced the time and therefore cost of pulpwood production and delivery, and has proved by statements of hundreds of producers that they prefer it to volumetric scale.

PULP MILLS . . . Attention

HEADQUARTERS FOR WOODROOM MACHINERY
From LOG HAUL to CHIP SCREENS

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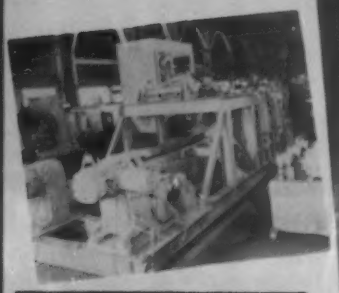

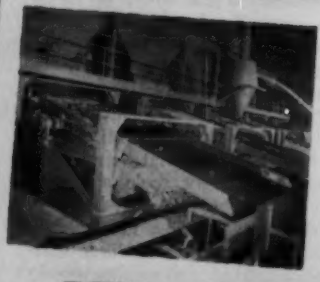

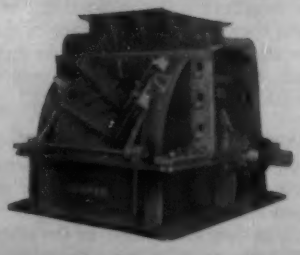
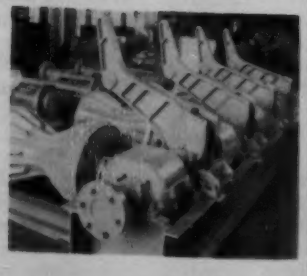

Designers and Builders of Quality Machinery for the Forest Products Industries

ESTABLISHED 1892

SUMNER IRON WORKS

EVERETT, WASHINGTON

In Canada: Canadian Sumner Iron Works, Ltd., Vancouver, Canada

PANEL MEMBERS (left to right): D. E. HESS, Glatfelter Pulp Wood Co., discussion leader, E. B. HURST, Consolidated Water Power and Paper Co., R. V. MALECKI, Union Bag & Paper Corp., S. P. KAPTAIN, St. Regis Paper Co.

Need for Efficient Slab Debarker

Requirements of ideal waste wood barker compared to development of machines available to date

By S. P. KAPTAIN
St. Regis Paper Co.

● Because of the increase in competition for pulpwood supply in the South, it has been necessary for our industry to search for a method of utilization of forest products which would insure us of an economical supply of wood fiber. The industry should not have in mind a source for a cheaper raw material but rather the relationship of our industry to the whole field of Southern economy.

SOURCE OF WOOD FIBER—Since it has been estimated that only one-third of the wood from a tree cut for sawlogs was marketed as a finished product, it is obvious that a tremendous volume of wood fiber could be made available in the form of chips manufactured from clean sawmill waste. It is estimated that the waste available for chipping approximates 0.5 cords per thousand board feet.

Much progress has been made in procuring chips from sawmills cutting over six million board feet annually. These mills can economically engineer for u[illegible] debarking equipment, chipp[illegible] screen. However, only 25% o[illegible] lumber-producing mills in the S[illegible] into this classification. The r[illegible] percentage is for the most p[illegible] up of small "peckerwood [illegible] sawmill operations. The chippa[illegible] waste at this type mill a[illegible] 0.65 cords per thousand [illegible] feet. This tremendous source of wood fiber cannot be tapped unless an economical method is developed to debark *all* forms of waste material (slabs and edgings).

LUMBER WASTE—begging for conversion to pulp chips.

REQUIREMENTS OF A MACHINE—The need for a waste wood barker is self-evident. The development of an efficient waste wood barker is the problem.

This problem involves developing a machine that will be the heart of a waste wood chipping concentration yard. This machine must be capable of processing all forms of waste material. Only by providing a market for all available chippable waste, with no sorting or extra preparation, will this material be offered at a low price.

The machine not only has to be capable of debarking all waste material, it must accomplish debarking at a very high percentage of cleanliness. The material should be processed but one time because recirculating material to achieve the degree of cleanliness required by the mills will reduce rate of production and increase operating costs. During debarking process wood fiber loss should be at

a minimum.

The machine investment should be low so that any slack in waste deliveries which would result in curtailed production would not increase operating costs too sharply.

The machine should be simple in design, ruggedly constructed, and low in power requirement. The ratio of initial investment to production and operating costs must result in a high percentage of efficiency.

DEVELOPMENTS TO DATE—There have been many attempts to develop an efficient slab debarker. Many mechanical type machines have been built, but have not been successful because of high operating costs, high loss of wood fiber, and inability to debark material cleanly.

However, at Decatur, Ala., a hydraulic slab debarker is being used which shows much promise. It is capable of processing all types of waste material with little wood loss, production rate is between 3 to 5 cords per hour, and cost of debarker, equipped with motor, pump and starter, is $22,970.00. There are times when material has to be processed more than one time to achieve the high degree of cleanliness necessary in chip production. The operator believes this problem will be solved by increasing pressure of water jets from 800 to 900 psi.

A chain type waste wood debarker is being put through extended production operation and pertinent information regarding this machine will shortly be made available to the public.

We must realize that this program is in its infancy, but it is a highly important one. We know that great progress has been made and all efforts should be directed towards continued progress in this new field of wood utilization by the pulp and paper industry.

How to Eliminate Hardwoods

Suggestions for controlling growth of hardwoods in Southern pine sites and returning to softwood stands

By R. V. MALECKI
Union Bag & Paper Corp.

● A report of a recent survey by the Southeastern Forest Experiment Station well justifies much of the comparatively recent thinking regarding the elimination of hardwoods on pine sites. The report describes 34% of the total forest area of Georgia as hardwood land. Only 22% was classified as hardwood land back in 1936, the date of the first Forest Survey. This trend to hardwood is largely attributed to pine cutting practices that leave a residual stand of hardwoods. The report estimates that 15% of the pine area cut each year is converted to hardwood.

CONVERSION TO PINE STANDS—One of the most frequently asked questions of our conservation and procurement foresters engaged in promoting better forestry with private landowners is how to convert areas of hardwood brush to pine economically. The answer is not a simple one. Ecologists tell us that the pine stands are largely sub-climax, and hardwoods eventually replace the pine as the climax type. Professor Lee Chaiken in his report on "The Behavior and Control of Understory Hardwoods in Loblolly Pine Stands" comments that as long as 50 years ago predictions were made concerning the replacement of pine by hardwoods in the absence of repeated fires.

DOZING OUT HARDWOODS leaves room for pine growth.

This so-called "hardwood invasion" is taking place on both dry and fairly moist sites. Site quality influences the species of hardwood that is to be controlled. On the dry, sandy "ridges," the scrub oaks, practically valueless, will take over; the more moist, fertile sites can be occupied by the gums and the sometimes useful oaks. Converting the pine-oak ridge land to pure pine is mechanically easy but often silviculturally difficult. Once the oak has been eliminated, artificial regeneration is usually necessary. The low site quality of such areas often makes for lower than expected yields. Whether the ridge land should be converted to pine or not is a question of economics. Soil site studies should select the best of the ridges for pine, and perhaps "write off" the poorest to assure no waste of expenditure and effort.

Higher quality hardwood-pine land occurs in the coastal regions. Bottoms and swamps should be maintained as hardwood producing areas; lands which we term as "transition," or hardwood-pine, can produce higher volume and value returns with pine than with hardwood. The characteristic hardwoods are generally of poor form and of low valued species.

HARDWOOD CONTROL METHODS—Various methods have been developed in recent years to effect hardwood control. The methods can be classified into two broad categories, (1) the non-selective and (2) the selective. In the non-selective, the entire

stand is removed from an area, while the selective involves picking and controlling individual stems. Most of the methods have been fully reported in government and industry releases. They are:

A. Non-selective Treatments. 1. Prescribed burning. 2. Mechanical elimination by use of bulldozers, brush blades, saws, slicers, cutters, knives, rollers and drags. 3. Chemical foliage sprays applied from aircraft or on the ground with high pressure equipment.

B. Selective Treatments. 1. Girdling with an axe or one of the recently developed tools or machines. 2. Using chemicals or tree poisons applied in cut surfaces. 3. Ground foliage chemical sprays. 4. Basal application of chemicals to the bark. 5. Utilization of merchantable hardwood species.

In Union Bag's land management program, the immediate problem regarding hardwood elimination is one of keeping the pine stands pure and recovering as much area as possible of the pine-hardwood stands that is now, or has been, cut back to regeneration stage. Priorities, therefore, have been assigned for areas to be treated as follows:

1. Priority 1 includes areas where pine seedlings occur under scattered large, non-merchantable hardwoods. Girdles, frills with or without poison are employed.

2. Priority 2 includes areas of larger pine seedlings that are over-topped by low grade but merchantable hardwoods. Control is similar to priority 1 areas except the hardwood is sold where possible.

3. Priority 3 includes areas of scattered pine seedlings dominated by hardwoods under 12 inches in diameter. Frills or notches with poison are employed.

4. Priority 4 includes areas where pine seedlings and seed source are lacking. Underplanting is planned followed a year later by girdling or frilling with poison.

5. Priority 5 includes areas of scrub hardwood brush and vines that can support pine. We feel that repeated burning or mechanical destruction is the solution, but have done little work in this priority. Some work has been done using foliage sprays on similar sites in the Ozarks with rather inconclusive results.

Our hardwood elimination work has been concentrated in the higher priorities and on our lands closest to Savannah. Although the problem is quite noticeable where it exists, company ownership-wise, only a small percent of the total acreage is involved. However, good site qualities and nearness to the mill have dictated a program of hardwood control. Regeneration of pine rather than stand improvement is our primary problem on these sites. While elimination of hardwoods in stands past the reproduction stage is good silviculture, it is an unwarranted practice if an increased number of pine stems does not result. Hardwood control must be double-barreled—it should be effective enough to permit adequate regeneration or growth of pine and it should be economical.

Trends in Tree Planting

Review of present-day tree planting programs throughout the nation and survey of tree planting machines

By E. B. HURST

Consolidated Water Power and Paper Co.

● While tree planting dates back to Biblical times, the first record of reforesting fire-scarred acres for commercial purposes took place near Nuernberg, Germany, in the fourteenth century.

As far back as 1827, the United States government experimented with the planting of live oaks in the South.

During the nineteenth century there was little or no forest fire protection and many people thought our supply of timber was inexhaustible. However, there were some exceptions. In 1870, private plantations were set out with wilding stock in New York state; in 1876, in Wisconsin. The establishment of Arbor Day, in 1872, resulted in some activity, while passage of the Timber Culture Act in 1873 initiated tree planting in a small way in the Prairie States.

Available records indicate that the first industrial planting took place on the West Coast in 1893, in the South in 1920, and Lake States in 1926.

MODERN REFORESTATION—The most significant trends in tree planting in the past decade, trends which have revolutionized reforestation are:

(1) The shift in emphasis from planting on public to private lands.

(2) Introduction of tree planting machines.

(3) Stepped up interest of the public in reforestation, especially in the growing of Christmas trees.

Modern reforestation as we know it, the production of trees by states on a cost basis for distribution to private landowners, had its beginning in New York State in 1908 and in Pennsylvania in 1910. Greatest impetus to this movement was the passage of the Clark-McNary Act in 1924 with allocation of public funds for increasing production in state nurseries.

The coming of forest fire protection and the CCC program in the 1930's focused national attention on reforestation. The banner year for public planting took place in 1940 when 51% of 519-million trees were planted on public lands.

By contrast, in 1953, only 21% of all planting was done on public lands; 79% on private lands.

There are many factors that account for the shift to private planting, but I believe the following are the most apparent: World War II dramatized the importance of wood to our economy when many new uses for cellulose were discovered. Immediately following the war a number of industry-sponsored educational programs got underway. Many of these programs included the distribution of free trees. The technical services of industrial foresters were also made available to private landowners.

TREE PLANTING MACHINES—Giant strides have been made in the use of tree planting machines because of the economy of operation during a period of high labor costs, and because of high survival count.

To document this significant trend in the use of tree planting equipment, a survey was made among 12 of the largest tree planting machine manufacturers in the nation. Eight manufacturers returned the questionnaire. This questionnaire revealed that there are more than 2,678 tree planting

Trees for Tomorrow

The pulp and paper industry will plant more than 50 million trees annually on its lands through 1962, according to surveys.

machines in operation. Their distribution in the different forest regions of the country are as follows, according to the survey: South, 1,252; Lake States, 596; Appalachian Region, 405; Central, 210; West, 126; Northeast, 89.

Some very interesting comments accompanied the questionnaire. Most of the manufacturers mentioned the fact that Christmas tree growers are making extensive use of tree planting equipment, and that overall survival amounts to about 90%. The pressure for planting stock for Christmas trees has resulted in placing a ceiling on the number of trees an individual landowner can receive for this purpose in some states. In one state planting stock for Christmas trees has been abolished entirely. In Wisconsin regulations require that the landowner maintain 500 trees per acre where planting is done with state nursery stock.

Some machines plant up to 400,000 trees a year and some only 15,000 according to one manufacturer. Another trend noted was the sky-rocketing price of land due to the availability of machines. One manufacturer states that most of the fields in open areas in the United States are now covered with trees and that in the future more sturdy stock will be required as well as more sturdy machines to operate on brush-covered land and on hillsides for planting of trees.

In the South some paper companies are contracting on the basis of lengthy leases for land within the high moisture belt.

CURRENT PLANTING PROGRAMS—On the basis of a survey made by the American Pulpwood Assn., the paper industry estimates that 53,160,000 trees will be planted annually on company-owned lands from 1952 to 1962.

The South leads all other sections of the nation in the rate of growth of tree planting, where in 1954 state nurseries produced 340,000,000 trees. This increased production in the South is reflected in a 1953 breakdown of the number of acres planted by states. Six of the 8 states showing the greatest increase in 1953 are located in the South.

Planting of trees in this nation is now big business and an important phase of the nation's forestry program. In 1953, 43 states participated in the federal-state cooperative program under the Clark-McNary law. Thirty-seven of these states increased their tree planting efforts or matched the number of acres reforested in 1952. Only six states decreased their planting. From the time reforestation got underway, through the 1953 season, a total of 8,967,223 acres have been planted in the nation. However it is estimated that there are still approximately 62,000,000 acres that need reforesting, a large proportion (four-fifths) of which are privately owned.

The following five states lead the parade in the number of acres planted including the 1953 season: Michigan, 1,014,689; New York, 886,085; Wisconsin, 598,144 acres; Louisiana, 445,975 acres; Georgia, 420,505 acres.

The creation of tree improvement committees in different sections of the country, the setting up of tree farms, new planting and distribution techniques, are only a few of the many changes within the decade. The progress made in reforestation within the past 10 years reflects what can be accomplished when the enthusiasm of the public is aroused and a practical means for action provided.

One of the greatest contributions tree planting has made is the interest it has stimulated in forestry and the resulting carry-over effect of introducing landowners to the more complex problem of good forest management.

Lifts Logs Level...

NO SWIVELING OR TWISTING...

Four-point sling suspension works wonders in faster, neater loading and storing of pulp wood. Transverse trunnion mounting of sling frame stops the swiveling and side-swing pendulum effect. With this new boom, logs stay parallel, slings slide out smoothly. Already outstanding for height of lift, length of reach, and precision of hydraulic control, the Harrison Loader Crane now brings new speed of cycle, new stability on uneven ground, new over-all capacity.

Power plant of the Loader Crane is the 65 h.p. Case "520" Diesel Tractor. At the touch of a button its 12-volt electric system provides instant starting, directly on diesel fuel. Six-point filtering system stands guard against dirt or water in fuel, protects injection pump and nozzles. Powrcel Controlled Combustion gives amazingly smooth, quiet performance at all speeds and loads. Big 7-bearing crankshaft, paired cylinder heads and fully machined wet sleeves assure long life with low maintenance. Send for full information. J. I. Case Co., Racine, Wis.

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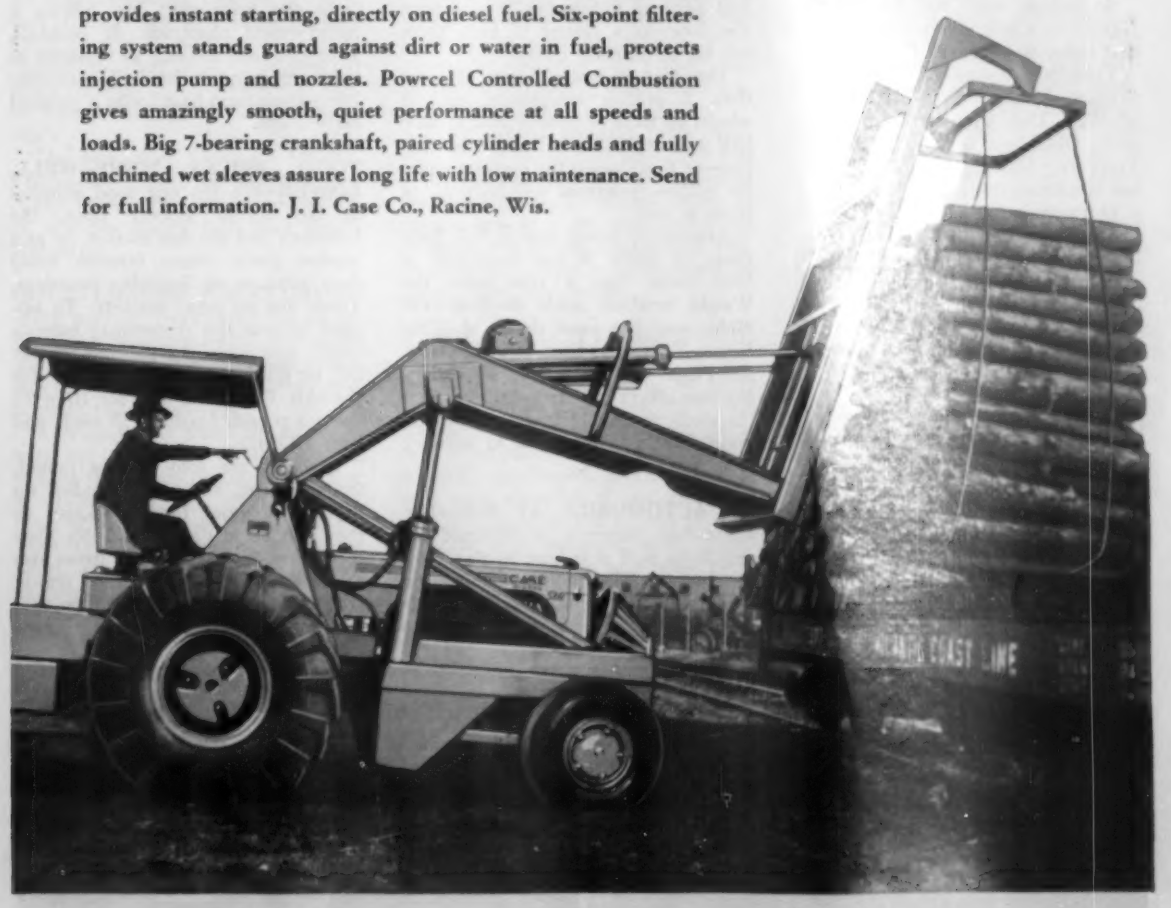


CASE

Looking at Forestry over 50 Years

How far has forestry come since 1905 . . . how does it compare with other fields . . . where do we go from here

By R. E. McARDLE
Chief, Forest Service
U. S. Dept. of Agriculture

● Forestry can't be considered in an economic vacuum. Progress in forestry moves along with progress in other things. So, to see how far we've come in 50 years, let's see where we were half a century ago. And let's turn back the pages, not just for forestry alone, but for other chapters of our economic and social life.

So, where were we, in February 1905? For a few minutes let's assume that today is February 23, 1905.

Theodore Roosevelt is President, William Howard Taft his Secretary of War. The American flag has 45 stars; Oklahoma is known as Indian Territory; Arizona and New Mexico are territories, too.

Our population has reached 83 million, which seems like a lot of people, but in only 50 years this figure will double. New York is a big city with 3¾ million people, half of what it will have 50 years later. Los Angeles with 102,000 people doesn't even dream of having more than twenty times that number of people.

NEW YORK'S SUBWAY—And here in New York the $40,000,000 subway rapid transit railroad has been in operation 3 months. It proudly boasts, "To Harlem in 15 minutes."

At the St. Louis World's Fair, which closed 2 months ago, the ice cream cone made its first appearance. And out West, final hurried preparations are being made for the Lewis & Clark Centennial Exposition scheduled to open at Portland, Ore., in June. A feature of this exposition will be a huge log forestry building which less than 50 years later will seem to shrink in size beside a neighboring mail-order house of Montgomery Ward.

In this February of 1905 Mr. Edison's electric lights are beginning to be used by more people, but in my home I do my lessons in the mellow glow of a "coal oil" lamp. I don't even dream of the day when our "ice box" will light up automatically as I open the door—as a matter of fact, there are no electric ice boxes.

The United States boasts of more than 2 million telephones, and it would be hard to believe that in only half a century we will have 50 million—or that during the evening hours 50 million teenagers will have all of them in use.

Aviation is brand new in this February of 1905. It has been only a little more than a year since the Wright brothers made their historic flight over the sand dunes at Kitty Hawk. Two years from now the Army Air Force will get started by assigning one officer and two enlisted men "to study the flying machine and the possibility of adapting it to military purposes."

AN AUTOMOBILE AT $650—The automobile, however, is 10 years old and looks as if it is here to stay. You can buy an Oldsmobile runabout for $650 and a touring runabout with both front and back seats for only $100 more. Neither has a top; if it rains you wear a raincoat or carry an umbrella. However, for $2,000 you can get a Pope-Waverly Electric, a closed job with glass windows, driven by storage batteries. It is advertised as "An automobile for winter use."

Outside the cities, automobile travel isn't so easy. The first transcontinental trip by automobile, made less than 2 years ago, took 64 days. The fastest time yet made across the country was on railway trains and took 3 days and 3 nights. For everyday travelers it takes from 6 to 8 days.

In the prize ring Jim Jeffries is heavyweight champion. In baseball, Brooklyn fans are just as unhappy as they are going to be half a century later—their team hasn't won a pennant since 1900.

FOOD PRICES WERE—WELL, LOWER—We get our food supplies at the corner grocery store, the butcher's and the fish market, or at a market place where farmers bring their produce on Saturday mornings. There are no super-markets. To upright citizens the groceryman extends credit, and when we pay our weekly bill he fills up a bag with candy for the kids. Fresh beef sells for 10 or 15 cents a pound; bacon is 15 cents and ham 12 cents.

Crackers are sold by the pound, from a barrel, and not all dudied up in triple-wrapped fancy packages as they will be in February, 1955. Oatmeal, lard, and most other items also are sold in bulk. There is no reason why it should occur to me then that in February 1955 I will burn or other-

LOGGING THEN . . . Four horse team pulls high-wheel sulky to a grade where two horses can pull it.

LOGGING TODAY . . . Tractor and arch skidding logs from woods to loading spot.

LOGGING CAMP IN 1905 . . . Winter logging camp, Minnesota.

LOGGING CAMP, 1955 . . . in Olympic National Forest, Wash.

wise dispose of more paper and cardboard wrappings in one day than I saw in a whole month when I was a boy.

At the Saks store here in New York you can get men's and women's suits for $20. The ladies can get a dandy pair of high-top button shoes for only $2.75, but these will be completely hidden beneath long dust-sweeper skirts. A train ticket from New York to New Orleans costs $37.75—round trip.

The New York Times for Sunday, February 5, 1905, carries 52 pages. (Fifty years later the Sunday edition of this newspaper will have nearly 300 pages.)

HOURS LONGER, WAGES LOWER—The average work week for all industries is 56 hours, a total of 2 whole days more than it will be half a century later. But a woods worker puts in more hours than that.

Average hourly wages for all industries are 24 cents. In the logging woods, the hourly wage in this year of grace, 1905, runs from 12 to 17 cents and as high as 27 cents on the West Coast. In some places in the South a woods worker gets 4 cents an hour plus board.

Living conditions in many logging camps seem pretty rugged but not as rugged as they will looking back 50 years from 1955. The big, one-room log bunkhouses have one door and no open windows. There are tiers of muzzle-loading bunks and a big pot-bellied stove kept red hot to dry the socks hung around it. At night the atmosphere gets pretty gamey—a man had to be tough to cut timber in 1905.

The Northeastern States have long since been logged over for white pine and are now being logged again for spruce. The Lake States still turn out a lot of lumber but are 15 or 20 years past their peak of production. The South as a region is in the lead now, but this year, out on the West Coast, Washington State will come up with a lumber output of nearly 4 billion feet, more than any other State.

The U. S. lumber production in 1905 will be a near record year with 43¾ billion board feet, but the all-time peak of 46 billion feet won't be reached for another 2 years.

Horse logging and bullwhacking is still going on in many places—in the Lake States with big wheels. Fifty years later that term "big wheels" will be used again, but it won't mean logging equipment.

River drivers are still fairly common in the North and East. The Far West and the South have turned to railroad logging. They don't know, of course, that 25 or 30 years later steam donkeys and steam locomotives will, in their turn, begin to be replaced by diesel "cats" and trucks.

TWICE AS MUCH LUMBER USED—In 1905 our per capita use of lumber is twice what it will be 50 years later. It will be some years yet before the lavish use of wood in construction will taper off. We do not yet realize, in 1905, that wood, one of the best and most plentiful of raw materials, will soon have to win its way in competition, with concrete, steel, aluminum, glass, asbestos, and other products of a highly industrialized age. We do not yet appreciate that we must make wood a precision engineering material with prescribed standards of quality.

In this year of peace and prosperity, 1905, we have 237 pulp mills and will produce more than 3 million tons of paper. Nearly two-thirds of this paper will be made from woodpulp.

Fifty years later this same two-thirds proportion will still hold true, but the total amount of woodpulp used will increase nine times and wastepaper, not rags, will make up most of the rest of nearly 30 million tons of paper and paper products produced by American mills.

Spruce, hemlock, poplar, and balsam fir provide most of our woodpulp in 1905; 50 years later Southern pine will supply more than half of the total requirements.

Remember—we are talking about the year 1905. The first kraft mill in North America, at Quebec, will not be built for 2 years, and 6 years will pass before the first kraft mill starts operations in the South.

Still to come is the great shift in packaging to various forms of fiber boards; the development of high wet-strength papers; of resin-impregnated, corrugated paper goods; of molded pulp products; of use of wood fiber for cellophane, and plastics; in 1955 all of these things haven't even been invented.

Still to come is the widespread use of fiberboards and building boards; of insulation blankets, and fiberboards for walls and acoustical tile; of wood fiber for roofing paper, roofing felts, and shingles. Such splendid development will contribute greatly to the demand for paper products and, as night follows day, to increased need for pulpwood.

PLYWOOD APPEARS—Although veneering antedates the birth of Christ, and a U. S. patent on plywood was granted in 1865, the first all-purpose, general-utility stock panel will appear in 1905. Douglas-fir plywood panels, made in manually operated presses and using animal glue spread with a brush, will be exhibited this year at the Lewis & Clark Centennial Exposition in Portland.

In the years to follow the main impetus to the infant plywood industry will not be from forest products research but from chemical and engineering research through the development of synthetic resins, some of which are useful as glues. These glues will make exterior grades of plywood possible.

What is only an idea in 1905 will in less than 50 years become an industry of great magnitude and importance. As with growth and development of the pulp and paper industry, the growth and development of this

new plywood industry will in the years to come increase the need for wood and have a corresponding effect on forest resources.

FORESTRY MANAGEMENT—What about forestry? Where do we stand in this year of 1905 in placing forest lands under management for continuous production of wood? We stand about as you'd expect at a time when it is easier and cheaper to move somewhere else than to stay put and grow timber as a crop.

Despite a few voices raised in disagreement, the widespread general impression is that there is plenty of timber, enough for a long time to come, so there is no need to produce a timber supply by growing it. Cut-over lands have so little value that it is not even considered essential to make any provision for fire control except to protect buildings, logging equipment, and logs at the landing.

On very little forest land is conscious effort being made, in 1905, to grow timber as a crop. The national forests have just been established, but the job there is mainly custodial and will continue so for some years.

There are perhaps a few thousand acres of privately owned forest land where conscious effort at long-time management for timber production is being attempted. There are a few thousand acres of forest-tree plantations such as those on the Biltmore Estate in North Carolina. But for the most part, anyone wanting to plant a large acreage probably would have to import the trees from European nurseries.

FEW FORESTERS—As a matter of fact, there are only a few foresters competent to plan and execute such work. The oldest forestry school is only 7 years old, and this and other schools have turned out a total of only 71 graduates. In 1905, 43 more will be graduated.

No one has any idea that by 1955, 35 colleges and universities offering professional training in forestry will have granted 21,500 undergraduate and 4,000 graduate degrees.

WHO COULD SEE AHEAD?—Who in 1905 is willing to say that 50 years later the pulp and paper industry will own or lease and have under good forest management some 28 million acres of land? Who—in 1905—can visualize the operation—50 years later—of 60 tree nurseries by this one great industry and the systematic planting of many thousands of acres every year to speed up full productivity from every possible acre?

Who can foresee—even as late as 1924—that the 23 foresters employed by pulp and paper companies will jump to more than 1,200? Or that some 200 of these foresters will be working, not on company lands, but helping farmers and other small owners supply more than half of the 1955 needs for pulpwood?

Who in 1905 can be expected to know that 50 years later, when a new pulp mill location is being considered, the prospect for a plentiful—and continuous—supply of pulpwood will become a factor as important as cheap power, adequate water, and transportation?

Yes, it's easy to answer such questions—today, when we know the answers. It's easy to point to nearly 600 million acres of land that today have organized protection from fire when in 1905 we had very little.

It's easy—today—to say that most of our public forest land and most of the land in larger forest industry ownership is getting increasingly good management, when 50 years ago that was only a dream and a hope. We can take a lot of satisfaction today in the knowledge that last year 800,000 acres were planted to trees.

It's not too difficult, looking backward, to see the great strides we have made toward better utilization in the woods and in the mill; to point out new uses for wood; to see substantial progress in forest management; to see how far we've come toward having more accurate knowledge of what we have to work with in the next half century ahead.

DOES FORESTRY PROGRESS HOLD ITS OWN?—And it would be just as easy for me to cloud this encouraging panorama by asking if you think we have made as much progress in forestry in the past 50 years as had been made in other fields.

Think back to 1905. Have we come as far as medicine has come? Or as far as we've come in putting electricity to work? Or in transportation? Or aviation? In forestry we've come a long way in 50 years, but let's not be too satisfied, too complacent, with our progress.

We have a far piece yet to travel. Half of all our forest land is held by small owners, and here we've only just begun to make headway toward productive forest management. We've made splendid progress toward getting the fire problem on a downhill pull, but it isn't licked yet. Toward control of bugs and blights we've hardly taken much more than some first steps.

And we've got to face up to the hard fact that in the South, nearly half the forest area is hardwood types and more than half the total timber volume is hardwood; that in the North, three-fourths of the timber is hardwood and the proportion is increasing.

And consider this in the light of the further fact that many present manufacturing plants are largely geared to use of a relatively narrow choice of softwood species.

You can, of course, convert the plants to fit what the forests are producing. Or you can in many places convert forest production to fit manufacturing needs. But if you choose to convert forest production, I think we need to realize that it won't just happen without conscious effort on our part any more than conversion of a manufacturing plant will just happen. We still have a big job to do in forestry, and I see no point in trying to tell you that we are on top of it.

SITUATION ENCOURAGING—Yet the present situation is encouraging. The best gauge of current progress in forestry in this country is not how far we've come in 50 years but how far we've come in the last 5 years, or 10 years.

Here the trend definitely is upward, and I think will continue so. A relatively few years ago only a handful of public and private agencies, only a scattered few far-sighted forest owners, were concerned with forestry progress. Now there are hundreds of agencies and thousands of individuals.

We have come a long way since February 23, 1905. We can take satisfaction in the forestry progress that has been made in recent years because on the whole it's been good. But we dare not be content—complacent—with our present rate of progress.

I know now that my old professor of forestry, Filibert Roth, was right when he used to tell us that "Wood is like bread, a necessity of the people." Our need for wood is going to increase as our population jumps ahead, as our technology advances, and as new uses for fiber are discovered. And we will have to meet this demand for wood despite ever-increasing demand on forests for products and services other than wood.

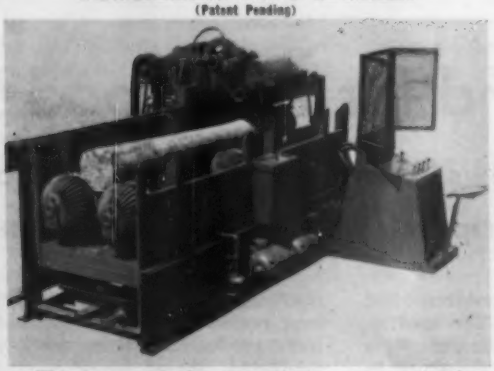
So the thought I want to leave is simply this: Let's look not to the past but to the future. Let's look not to 1905 but to 1955 and the years ahead.

Let's recognize that the opportunities that lie ahead in forestry are as great as any ever before us in the past. We have scarcely begun to capture the full potentialities of our forest lands. I think we can all agree that we have a job to do.

SODERHAMN HEAVY DUTY
WOOD WASTE RECOVERY EQUIPMENT
Now Giving Outstanding Service in Over 50 Installations in Southeast

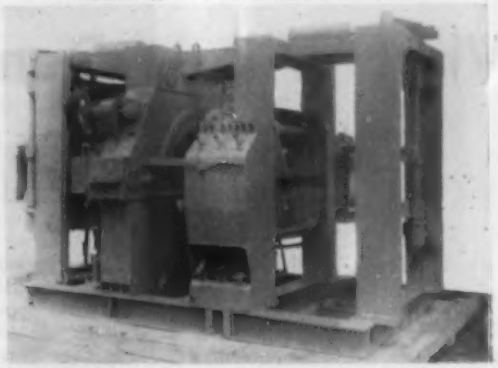
Success of Soderhamn wood waste utilization and gang saw equipment is due to a combination of the rugged strength of its construction, simplicity of design, economy of operation, dependability of direct factory service and engineering given on a guaranty basis of performance. Many new and improved features make Soderhamn barkers, chippers and screens more efficient than ever before.

SODERHAMN D-3 BARKER
(Patent Pending)



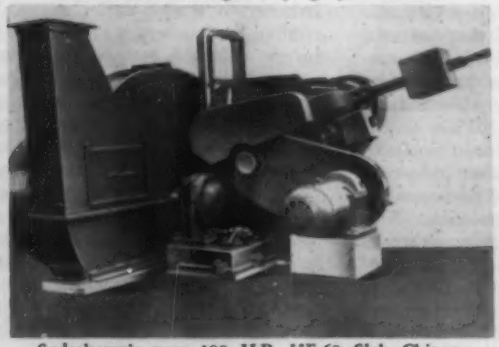
This low-cost barker is available with cutterhead or new articulated head (interchangeable). Has a maximum feed speed of 40 linear feet per minute. Handles 8-foot lengths and up. Long diameter range 5" up to 36". Gasoline or 30 H.P. electric power. Investigate also our new revolutionary two-way log flipper.

ANDERSON BARKER Heavy Duty
With straight or pivoted toolarms
Pneumatic Type—Pat. Nos. 2,576,966 and 2,623,558



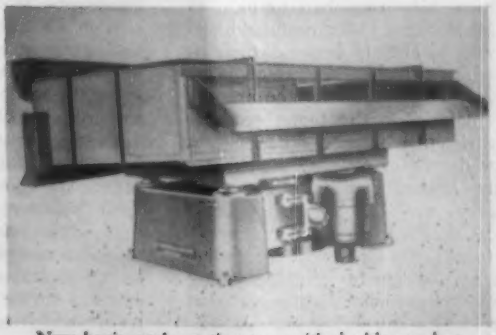
Effectively and economically debarks both hardwoods and softwoods up to 120 linear feet per minute. Reduces saw changes, cuts clean-up time in the mill.

HF-60 and HF-30 SLAB CHIPPERS
A Must to Meet Rigid Pulping Specifications



Soderhamn's new 100 H.P. HF-60 Slab Chipper produces 10 cords of chips per hour, handles simultaneously round logs, slabs, etchings, cut-offs, box factory and veneer waste. Different models are available in sizes to meet individual mill requirements.

SODERHAMN CHIP SCREEN CS-90C or CS-35



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The Next Fifty Years and Meeting Its Demand

PANEL MEMBERS (left to right): R. J. PRESTON, North Carolina State College, R. E. WERTHEIMER, Longview Fibre Co., E. T. F. WOHLENBERG, Yale University, L. A. WHITTLE, Brunswick Pulp and Paper Co., chairman, A. KENNETH BEGGS, Stanford Research Institute.

What Will Be Demand for Pulpwood?

Stanford Researcher reviews future demands on America's pulpwood supply and anticipated sources and expansion

By A. KENNETH BEGGS
Senior Economist
Stanford Research Institute

● As one interested in the economics of the pulp and paper industry, I can think of few, if any, more interesting or significant subjects for discussion by your industry than "The Next Fifty Years." Taking the "long look" at what the future might hold is perhaps more significant to the forest products industries than to most of the other of our major resource-based industries. This is because there is probably a higher degree of intra-industry competition for the primary raw material in the forest products industries than in most others, and a lower degree of concentration of resource control than in other major industry groups. In spite of these factors that lead to rapid cutting of our forests, the forest products industries as a whole by sound planning can use the raw materials available at a rapid rate and still insure an adequate supply for needs in the distant future.

In order to continue our present use of wood resources at the present astounding rate of about fifty billion boardfeet annually for all uses and still be able to meet the requirements of the future requires careful planning of present and future wood production and use based upon reasonable expectations of the future in terms of wood requirements for end-product manufacture.

Similar planning problems face other major industries. The steel industry has penetrated the distant ore deposits of Venezuela to secure its long-range planning. Petroleum producers have found economic advantage in crude oil imports from the Middle East. Short bauxite ore supply in this country has caused the aluminum industry to look almost exclusively to foreign ore supply. In recognition of these situations, the President's Materials Policy Commission in 1952 indicated that we as a nation are exhausting our raw material supplies at such a rate as to be self-sufficient in relatively few natural resource materials by 1975.

In one respect, the forest products industries differ from other industries depending upon natural resources for their primary raw materials. The earth's crust contains a given although unknown amount of iron ore, bauxite, or oil; and a more serious limitation exists as to the amounts of these materials which are economically available.

Man is unable to replace the ore or the oil which he removes, but he can replace the logs he cuts from the forest for lumber, pulpwood, plywood, poles, piles, and other wood uses. And since man can replace the forest resources, the most important problems for him are to insure that by improved technology and sound planning he makes the most economic use of existing wood resources in the short period, and by planning and planting, replace his cuttings over the long period. On these premises the forest products industries, wisely administered, should never want for markets or raw materials to supply those markets at prices consumers are willing and able to pay.

ESTIMATING FUTURE NEEDS—Crystal ball gazing, a basic prerequisite for taking the "long look" at the demand and supply factors for any industry, is scoffed at by many. Yet reading the tea leaves to estimate the future is of the essence to all business. Without formulation of some expectations for demand and supply factors for the short and the long run, any future investment in forest land and pulp and paper mills is as much of a gamble as the turn of the roulette wheel. Projections of the future are not static concepts, and once made, however well founded, should be subject to review and revision in light of new experience; yet, without a blueprint, planning on rational grounds is impossible.

During the last few years a group of economists and market analysts at Stanford Research Institute have devoted a major portion of their time to the dynamic demand and supply problems of the forest products industries. Some of the studies undertaken in this field have been of national and industry-wide character, others have concentrated on the problems of particular regions, still others have been concerned with the prob-

(MILLIONS OF CORDS, ROUGHWOOD BASIS)

Region	1953 Total	1953 Softwood	1953 Hardwood	1960 Total	1960 Softwood	1960 Hardwood	1965 Total	1965 Softwood	1965 Hardwood	1970 Total	1970 Softwood	1970 Hardwood	1975 Total	1975 Softwood	1975 Hardwood
Total U. S.	24.5	21.0	3.5	33.4	27.1	6.3	38.1	29.9	8.2	42.3	32.3	10.0	47.5	35.0	12.5
Mill Residuals	1.5	1.4	.1	3.3	3.1	.2	5.6	5.0	.6	7.4	6.3	1.1	9.4	7.9	1.5
Logs and Bolts	23.0	19.6	3.4	30.1	24.0	6.1	32.5	24.9	7.6	34.9	26.0	8.9	38.1	27.1	11.0
East	5.7	4.0	1.7	6.3	4.0	2.3	7.0	4.0	3.0	7.6	4.0	3.6	8.5	4.0	4.5
Mill Residuals	.02	—	.02	.1	.05	.05	.2	.1	.1	.5	.2	.3	.9	.4	.5
Logs and Bolts	5.7	4.0	1.7	6.2	3.95	2.25	6.8	3.9	2.9	7.1	3.8	3.3	7.6	3.6	4.0
South	14.5	12.7	1.8	21.1	17.1	4.0	24.1	18.9	5.2	26.8	20.4	6.4	30.0	22.0	8.0
Mill Residuals	.1	.02	.08	.7	.5	.2	2.0	1.5	.5	2.8	2.0	.8	3.5	2.5	1.0
Logs and Bolts	14.4	12.7	1.7	20.4	16.6	3.8	22.1	17.4	4.7	24.0	18.4	5.6	26.5	19.5	7.0
West	4.3	4.3	—	6.0	6.0	—	7.0	7.0	—	7.9	7.9	—	9.0	9.0	—
Mill Residuals	1.4	1.4	—	2.5	2.5	—	3.4	3.4	—	4.1	4.1	—	5.0	5.0	—
Logs and Bolts	2.9	2.9	—	3.5	3.5	—	3.6	3.6	—	3.8	3.8	—	4.0	4.0	—

TOTAL HARDWOOD-SOFTWOOD PRODUCTION expected to double by 1975.

lems of individual firms in the forest products industries.

Among the more comprehensive of these studies have been our studies of the newsprint situation in the western region of North America looking forward to 1961, and our study of "America's Demand for Wood, 1929-1975," sponsored by Weyerhaeuser Timber Co. and published in 1954.

In connection with consideration of pulpwood for the next fifty years, I should like to present some of the more pertinent conclusions at which we have arrived on America's future demand for pulpwood and some of the reasoning underlying these conclusions. In this regard the Weyerhaeuser study is the most comprehensive we have done. The specific tasks set for us in this study were, first, to estimate by five-year intervals the demand out to 1975 for each of the major forest products, and, second, to estimate the amount of wood that will be required at mill doors to meet the expected demands.

The demand for pulpwood is a derived demand; that is, the demand for pulpwood depends upon the demand for woodpulp, paper, board, and other pulp products. So in order to estimate the future economic requirements for pulpwood, we must first estimate the future demand for pulp, paper, board, and other pulp products. The changes in demand through time for pulp and pulp products we know vary with changes in both the size of our population and the level of economic activity of the nation. Our starting point in this report to you will, therefore, be our projections on the future size of our consuming markets expressed in terms of people to buy these products, and the level of economic activity of our nation as a measure of their ability to buy the end-products of pulpwood conversion.

DEMAND FOR PULP PRODUCTS—Estimates of growth of our economy in terms of people and production cannot be reasonably projected except within the framework of some assumptions on the state of war or peace for the period considered, and upon the probable relation of government to business, labor, and agriculture. Our projections are predicated on an assumption that there will be no all-out war for the period of projection, but that there will be a continuing high level of military preparedness. Further, these projections are of long-term relationships and made no attempt to predict short period rises and falls of business activity which we fully expect to continue. We expect that "big government" is here to stay and that it will increasingly work with business, labor, and agriculture with increasing effectiveness to mitigate the severity of effects of business cycles on the economy.

The population of the United States is now about 160 million. We expect this population to increase by 1975 to about 212 million, an increase of about 32% over the coming two decades. While this represents an average annual increase of about two and one-half million people for the whole period, we expect that the rate of population increase will be greater between 1960 and 1975 than between now and 1960.

We expect that the level of economic activity of the United States, measured by real changes in the total value of goods and services produced, to increase from about $360 billion in 1954 to about $586 billion in 1975 expressed in constant dollars, an increase of over 60%. This estimate of increase in economic activity reflects expectations of a rising size of labor force, increases in productivity of labor and capital at about past rates, and a high-level but not full employment. These estimates do presage a healthy economic environment facing the wood growing, pulp, paper and board industries for the coming two decades.

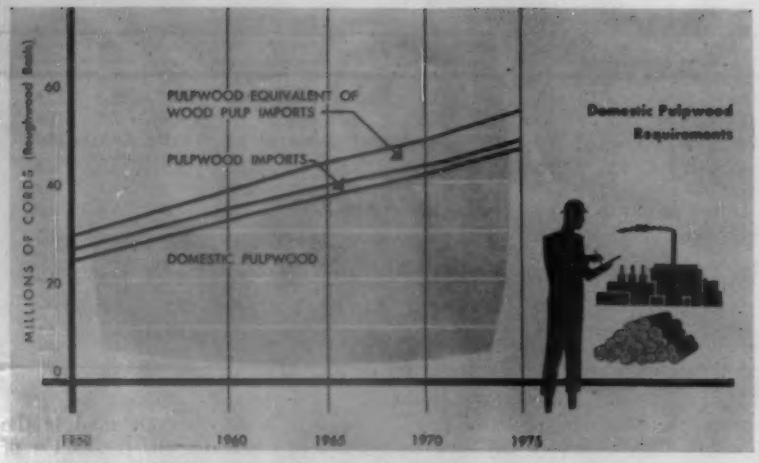
Out of the about 50 billion board-feet of wood currently used in the United States for the production of wood products, the nearly 4½ billion boardfeet of wood used in the form of pulpwood represented about 8¾% of total wood used. In terms of wood used, pulpwood, for the manufacture of wood pulp and pulp products, was surpassed only by lumber, which accounted for about 75% of total wood use.

The largest consumer of woodpulp is paper which has about twice the wood requirements per ton of product as does paperboard. As a result about 54% of all woodpulp consumed in the United States was used by the paper industry, as compared to about 33% by the paperboard industry. Of the balance about 9% of woodpulp consumption is for the production of building paper and building boards, and the remaining 4% by products made from dissolving pulp.

With the established statistical relationship between the consumption of paper and changes in population and economic activity are applied to the projected changes we foresee in these factors for the period out to 1975, we derive estimates of paper consumption of about 21 million tons for 1960 and 28 million tons for 1975. These represent an increase over current levels of about 18% by 1960, and an increase of about 58% over current levels by 1975.

Similarly, we expect the demand for board to increase to just under 17 million tons in 1960, an increase of about 20% over current levels, and to nearly 25 million tons in 1975, an increase of about 80% over the present. The demand for rayon and acetate we foresee increasing to about 1 million tons in 1960 and 1.6 million tons in 1975, representing increases of 60% and 166% for this period over the present.

These estimates indicate an expected increase of 59% in paper consumption, 80% in board consumption, and 167% in rayon and acetate



DOMESTIC SUPPLY must meet future requirements.

consumption in the 22-year period through 1975 as compared with a 58% rise in the level of national income and a 34% increase in population. Percentagewise, therefore, the demand for all major categories of pulp products are expected to increase more rapidly than the economy as a whole.

SUPPLY WILL BE DOMESTIC—It appears likely that the major source of supply to meet these expected levels of consumption in future years will continue to be domestic production. The possibility of imports of finished paper and board, and other pulp and products at prices lower than domestic production over the coming two decades to meet the entire expected increases in demand appears dim.

The increasing demand for pulp and pulp products in most regions of the world and the increasing ability of these countries to pay higher prices for pulp products as their economies improve will tend to bid up the import price of pulp and pulp products for the United States in future years. Furthermore, there appears to be little possibility of obtaining increased foreign production of most pulp and pulp products at prices lower than such increases could be obtained from domestic production.

The factors that operate to increase the supply costs for pulp products manufactured in this country, such as more isolated mill sites and increased distance from markets will also tend to apply to foreign production. Prices of domestic production of pulp and pulp products will tend to cause consumers to rely primarily on domestic production.

Net imports of paper and board in recent years have totalled nearly 5 million tons, mostly newsprint. It is expected that net imports of paper and board in future years will tend to decline slightly as a percent of total consumption. By 1960, net imports are estimated at about 5.6 million tons (15% of domestic consumption) and by 1975 net imports are expected to be about 6.3 million tons (12% of domestic consumption). On this basis, production of paper and board by 1960 in the United States would be 32 million tons and by 1975, 46.6 million tons.

PULP REQUIREMENTS—These expected increases in the demand for paper, board, and other pulp products together with expectations of slightly increasing use of woodpulp per ton of product result in estimates of rapidly rising woodpulp consumption in future years. From an industry-wide average of 0.708 tons of woodpulp per ton of paper and board produced in 1952, it is expected that woodpulp consumption will increase to about 0.73 tons of woodpulp per ton of product by 1975. Greatest increases of woodpulp in the furnish are foreseen for container board, boxboard, building paper, building board, book paper, and other printing papers. Little or no increase in the use of woodpulp per ton of product is possible for fine paper, newsprint, coarse paper, and sanitary and tissue paper.

Estimates of woodpulp consumption in the production of paper and board in the United States in 1960 and 1975, based on paper and board production estimates on each of these years, show consumption to total over 23 million tons in 1960 and 34 million tons by 1975.

By 1960, woodpulp consumption to produce rayon and acetate and other products such as plastics, explosives, photographic film, cellophane, and lacquers, is expected to total about 1.2 million tons and by 1975, 1.8 million tons. These requirements are expected to be met almost entirely by dissolving and special alpha pulps.

Estimated total woodpulp consumption figures for 1960 and 1975 would therefore be about 25 and 35 million tons respectively.

The consumption of sulfate, semi-chemical and defibrated and exploded pulps are expected to show the greatest percentage increases through 1960 and 1975. The increase in consumption of sulfate pulp is estimated to increase to nearly 14 million tons in 1960 and to 20 million tons in 1975, a 94% increase in the two coming decades. Minor increases for sulfite and little or no change in the consumption of soda pulps are foreseen.

It appears likely that the bulk of our woodpulp requirements will continue to be met from domestic production with imports not exceeding their present relationship to consumption. Imports, therefore, may increase to about 2.5 million tons by 1960 and to about 4 million tons by 1975. A larger quantity of imports in future years seems improbable since the delivered price of imports in quantities considerably larger than this would probably not be competitive with domestic prices.

Domestic production of woodpulp, on this basis, would therefore increase from 17.5 million tons in 1953 to about 22 million tons by 1960 and would further increase to about 33 million tons by 1975, an increase of about 89% in the two coming decades.

Based on these projections of woodpulp requirements, we estimate that our pulpwood requirements at mill doors will increase from about 26½ million cords in 1952 to about 35 million cords in 1960, and nearly 49 million cords in 1975, an increase of nearly 85% over the two coming decades; and the domestic production of pulpwood in 1975 to account for about 97% of the total.

RELATIVE PRICES—Inherent in such projections as these is the basic assumption that the prices of woodpulp, paper, board, and other pulp products will remain in the same general relationship to the prices of competing materials and the general level of prices during the estimating period as they have in the past. Since these estimates encompass a period sufficiently long for major changes to be made in the capacity of the pulp, paper, and board industry, the future price levels of these products will be primarily determined by future changes in the cost of production.

Over the long period the conditions of supply in the pulp, paper, and board industry will tend to be positively responsive to increases in demand prices. Evidence of the long-run

responsiveness of new supply of pulp, paper, and board to price changes is the 54% increase in domestic woodpulp capacity, and the 33% increase in paper and board capacity in the postwar period, in response to only 11% increase in the price of paper and 13% increase in the price of board in relation to the general level of prices between 1946 and 1953.

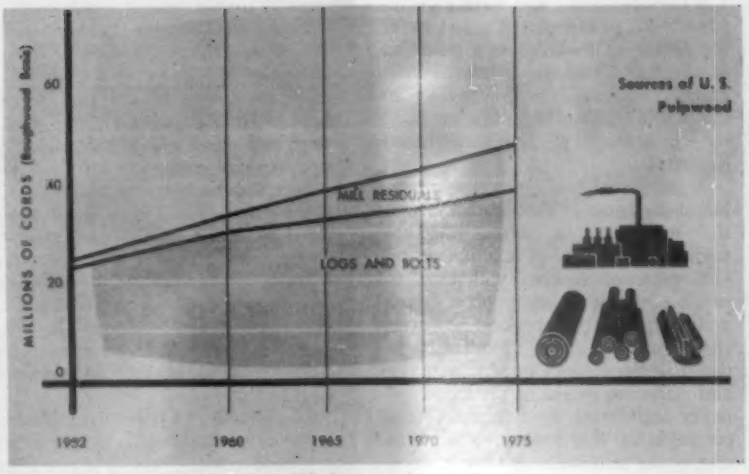
By comparison lumber prices have increased about 286% over the past 15 years with little change in total supply, as compared to only about a 90% increase in the prices of its competing materials.

It appears highly probable that additional capacity in woodpulp, paper and board will be forthcoming in future years to meet rising demands for these products at competitive prices. The very fact that demand is increasing rapidly will tend to induce additional capacity by producers who desire to maintain their share of the market for these products. The historic stability of the industry and the adequate return it has offered on investment will tend to provide the incentives to attract additional investment capital.

In addition to the incentive to expand capacity, the availability of wood supplies and other raw materials in close proximity to some existing capacity and close to potential mill sites makes such expansion economically feasible. The return that might be expected on investment in new pulp, paper, and board facilities compares favorably with the return on other manufacturing investment of good risk.

INCREASING CAPACITY—If the demand for woodpulp and pulp products is to be met, additional capacity will have to be provided. Increases in domestic capacity in pulp, paper, and board will perhaps be supplied to a great extent in the future as in the past by existing producers. This source of increased capacity is characteristic of most of our established industries, especially those requiring a substantial capital investment. Existing producers will tend to expand capacity as much as possible by lower-cost additions to present facilities, and if this becomes infeasible, by constructing new mills in those regions of the country where wood costs and other costs of production and distribution are sufficiently low to permit an adequate return on investment over the life of the mills.

Additions to industry capacity might also come from firms new to the pulp, paper, and board field. It is most likely that new entrants into the woodpulp segment or the paper and board segment of the industry, or



INCREASING UTILIZATION will help meet chip needs.

both, will be those that are already operating in the forest products industries.

Lumber or plywood producing firms that have extensive timber holdings are prime candidates for entry into the woodpulp industry and also into the paper and board manufacturing industry. Such firms are stimulated by the pressures to spread wood costs and other costs over a wider range of products and are also attracted by the profitability of the pulp, paper, and board industry. They have sufficient timber reserves to meet most, if not all, of their wood requirements and can be assured of a steady supply of wood at less than market prices. The high level of stability in the pulp, paper, and board industry, together with high levels of future demand for pulp and pulp products, will doubtless result in continued entry into the pulp and products industries by firms in this classification.

The possibility continually exists that firms presently producing pulp, paper, or board in North America will expand their operations through the establishment of mills in regions new to their firms. The availability of mill sites and the growth of the market in the western United States and Canada will tend to induce many multi-mill producers to establish capacity in these regions for the first time. These firms, also, might ship woodpulp from existing mills in one region to a paper or board mill in a new region in the expectation of strengthening their market position in that area.

WESTERN EXPANSION PREDICTED — As new capacity enters the pulp, paper, and board industry it is likely that an increasing proportion will be constructed in the West. This region at the present time has only 18% of our national woodpulp capacity as compared with about % of our national softwood timber supplies. New mills in the West could be based on the large supply of sawmill and plywood mill residues generated in that area as well as on available timber stands.

More than half the lumber output of the United States is currently produced in the West and virtually all the national softwood plywood production comes from that region. With the likelihood that the West will continue to be the major lumber and plywood producing region of North America in the coming two decades, the supply of mill residues in this region will be sufficient to supply several additional pulp mills.

Expansion of paper and board capacity in the West also appears likely since this region supplies only 10% of the national paper and board output, but accounts for 14% of national population. Expectations of disproportionate increases in population in the West together with the relatively high income levels of this region will make the imbalance between paper and board production and potential consumption even more disparate unless additional paper and board capacity is added in this area.

AND IN THE SOUTH — Further expansion in the industry also appears likely in the South. The short growing season for the Southern pine, the possibility of year-round logging operations, and closeness to large metropolitan markets of the Northeast and North Central regions of the United States offer incentives to develop potential woodpulp mill sites in this region.

Some indication of the expected future relative increase in southern pulp production is obtained from the estimate that log and bolt requirements for the production of pulpwood in the South is expected to increase about

77% between 1952 and 1975 as compared with an increase of only 59% for the nation as a whole. As a reflection of the trend towards increased integration, increased pulp capacity in the South is likely to be accompanied by increased paper and board capacity.

A continuation of more rapid population increases in the South than for the nation as a whole together with rising levels of manufacturing and personal income will tend to result in rising consumption of paper and board in that region. However, since the South already provides more than half the nation's woodpulp supply and since the excess of production of paper and board over apparent consumption in that region allows it to supply the remainder of the country—particularly the Northeast and North Central areas—with these products, additional capacity in the South, despite rising consumption in that region, will doubtless result in a continuation of the South as a surplus region.

Continued progress in the reduction of raw material costs, production costs, and distribution costs in future years is expected to be sufficient to permit woodpulp, paper and board to be supplied at prices bearing about the same relationship to the prices of competing materials and the general level of prices as they have in the past, largely through favorable pulpwood prices. The continual broadening of the wood base that has been taking place over the past decade or more is expected to continue with the result that, although prices of wood of sawlog size may continue to rise more rapidly than the general level of prices, the price of pulpwood is expected to rise no more rapidly than the general level of prices or the prices of competing materials.

WIDER UTILIZATION — The continual adaptation of pulping processes to the utilization of forest residues of all types, including dead and down trees, cull trees, sanitation cuttings, limbs, and other slash will greatly increase the available supply of wood to the industry. The more widespread practice of whole tree logging, relogging, prelogging and other practices to increase wood utilization per acre of forest land will serve to keep down the price of pulpwood and tend to prevent the price of sawlogs for lumber and peelers for plywood from increasing as fast as they otherwise might were not these increased quantities of low grade wood made available to the pulp industry.

Pulpwood costs are expected to be held down in future years not only through more intensive utilization of forest lands, but also through more intensive utilization of each tree so that costs can be spread over a greater volume and larger variety of wood products.

Increased use is expected to be made of sawmill residues, and peeler cores, and other wood now wasted as improvements are made in whole log barkers, slab barkers, and chippers and as the price of this equipment is reduced to make its use profitable to smaller wood-working mills. Developments in the collection of unbarked sawmill residues and the barking of slabs at central points or at the pulp mills will also allow residues from smaller mills to be utilized economically in the future.

A continued high level of lumber output over the coming twenty years with production expected to rise from present levels of about 38 billion boardfeet to about 41 billion boardfeet by 1975 and a rapidly increasing output of softwood plywood from present levels of more than three billion square feet to more than 7 billion square feet by 1975 indicate that increasing quantities of mill residues will become available for pulping in future years. The expected continued importance of the West in both lumber and softwood plywood production over the coming two decades makes the supply of residues especially conducive to pulp expansion in this region.

It has been estimated that mill residues will increase from about 6% of pulpwood requirements at the present time to about 10% by 1960 and to about 20% by 1975.

On a regional basis, the greatest utilization of mill residues in relation to pulpwood requirements is expected to occur in the West, where wood from such sources is expected to account for more than half the pulpwood requirements by 1975 as compared with about one-third of requirements at the present time. In the South, mill residues are expected to increase from less than 1% of pulpwood requirements in 1952 to almost 12% by 1975 and in the East mill residues as a percent of total pulpwood is expected to increase from about 3% to almost 11% over the same period.

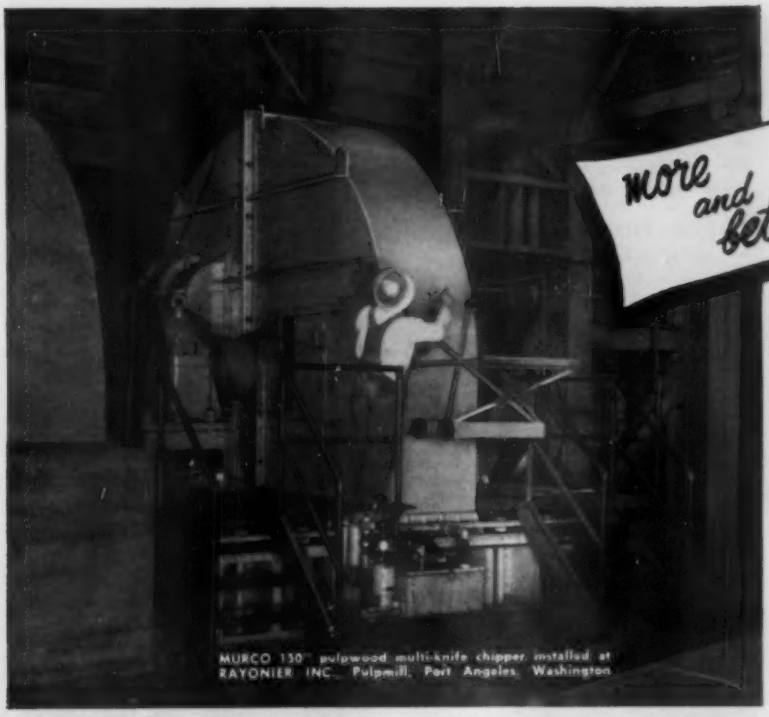
ALL THE WOOD TO BE USED — The continuation of the trend toward product diversification in the wood products industries will tend to foster the closer utilization of all the wood in each tree. Whereas present intercompany wood trading and selling succeed in making the most economic use of each tree to a certain extent, wood costs are higher than they otherwise might be because of the need for transporting wood of various grades and species from one firm to another. Entry into the woodpulp industry by large sawmills or groups of sawmills would be an example of the type of diversification that would minimize such transportation costs and allow all the wood to be utilized in the most economic manner. The production of lumber and woodpulp by a single firm would allow sawlogs to be utilized for lumber and low quality wood, including mill residues, to be used for the production of woodpulp.

The broadening of the wood base available to the woodpulp industry will be aided to a substantial degree by the increased use of hardwoods for pulping. The concentration of hardwoods in the South and East has already led to their utilization for woodpulp—in 1952 about half the hardwoods used for pulping in the United States were consumed in the South and about half in the East. In that year, about 12% of the pulpwood production of the East was accounted for by hardwoods and about 30% of the pulpwood output of the South was made up of hardwoods.

The relative scarcity of hardwoods in the West precludes their use for the manufacture of woodpulp in that region to any significant extent. Whereas hardwoods represent only about 14% of the wood used for pulping in 1952, it is expected that by 1960 hardwoods will account for about 19% of pulpwood consumption and by 1975 will make up about 26% of all pulpwood used. Greatest increases in the use of hardwoods are foreseen for the East where hardwoods are expected to account for more than half that region's pulpwood production by 1975. Hardwood utilization in the South by 1975 is expected to be more than 25% of total pulpwood production.

PRICES HELD DOWN — In addition to the dampening of price rises in pulpwood, the prices of woodpulp, paper, and board will tend to be held down in future years to increases in line with changes in the general level of prices through reductions in manufacturing costs. One such method will be through greater emphasis on higher-yield pulping processes in which more pulp output will be obtained from the same quantity of wood. Higher yields of woodpulp per ton of wood can be obtained through improvements in the pulping processes, and through use of higher density woods.

The adaptation of pulping processes to use a wider variety of species and to be less exacting in their species requirements for any specific grade of pulp will also tend to reduce relative woodpulp costs. If woodpulps with the required physical properties can be obtained without the relatively strict



MURCO 150" pulpwood multi-knife chipper installed at RAYONIER INC., Pulpmill, Port Angeles, Washington

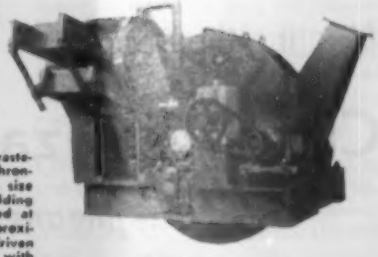
more and better... CHIPS

at less cost with MURCO Chippers

In addition to the giant-size chippers, that reduce whole logs 36" in diameter, 20' long, to pulpwood chips in a few seconds at a capacity of one hundred cords per hour, we design and manufacture chippers in the following diameter discs: 36", 50", 54", 60", 64", 75", 84", 86", 88", 90", 102", 110", 120". Whether it is a 36" chipper or the giant-size, there is a reason for the wide preference for MURCO Chippers by paper mills throughout the country . . . it is their outstanding performance, producing more and better chips at less cost, with less sawdust and slivers, free from repairs, while at the same time having production records of one hundred cords or over per hour . . . and because MURCO Chippers are compact they require less floor space. Write for complete information on MURCO Chippers.

MURCO MULTI-KNIFE WASTEWOOD CHIPPERS

Made in 3 sizes—54", 64", and 72" diameter discs, the MURCO High Speed Multi-Knife Wastewood Chippers have the most versatile, flexible chipper design now available to chip producers . . . they operate with a minimum of slivers, sawdust, and chip rejects . . . economically priced . . . low maintenance cost . . . can be used as a portable unit mounted on skid or trailer for Diesel engine drive.



MURCO MECHANICAL FEED WASTEWOOD CHIPPERS

MURCO 75" diameter 4-knife mechanical feed wastewood chippers have the spout feed mechanism synchronized to the speed of the disc to produce uniform size chips . . . damping device utilizes all the wood, holding slivers to a minimum . . . capacity when operated at 500 RPM and set to cut 3/8" to 3/4" chips is approximately 10 cords per hour . . . chipper can be driven by electric motor or Diesel engine . . . available with blower housing if pneumatic chip conveying is desired.

MURCO PULPWOOD CHIPPERS Are Made In The Following Sizes:

36", 50", 54", 60", 64", 75", 84", 86", 88", 90", 102", 110", 120", and 150" diameter discs.

Write For complete details and proposal on the MURCO Wastewood Chippers that will meet your requirements . . . to produce quality specification-size pulpwood chips from slabs, edgings, round wood or veneer cores.

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limitations on species used, the extra costs of handling and sorting logs by species and the extra transportation costs often incurred in providing the species required could be eliminated.

The expected expansion of the pulp, paper, and board industry both by existing producers and by firms new to the industry, together with the efforts of these firms to hold down costs, will result in continued keen competition for the major raw materials—pulpwood and woodpulp—in future years. In addition to continued competition among firms at each level of this industry for raw materials it appears likely that there will be the continued competition among firms in the pulp, paper, and board industry and firms in the lumber, plywood, and other wood products industries.

Further, continued competition for market pulp supplies can be expected among firms in the paper and board segment of the industry and firms in the rayon and acetate industry, and other industries using woodpulp. The expected growth in production of lumber, plywood, and most other wood products as well as the expected increases in output of rayon and acetate and other pulp products will serve to intensify this struggle.

A reflection of this continued competition for markets as well as raw materials is the expected continued integration in the pulp, paper, and board industry. Nonintegrated firms will continue to face pressures to cause them to integrate backwards into woodpulp production and even to forest land ownership and perhaps forward to paper and board conversion and even to distribution.

Firms presently integrated from woodpulp through paper or board production will also feel sufficient competitive pressures for raw materials to cause them to secure adequate forest land holdings to insure some portion of their wood requirements and they will also feel sufficient competition for markets to cause them to add converting facilities to facilitate marketing of their output.

INTEGRATION OF PRODUCTION — Continued horizontal integration and product diversification can also be expected at each level of the pulp, paper, and board industry. Large forest land owners who are producing lumber or plywood appear likely to enter the woodpulp production segment of the industry to utilize their wood supplies more efficiently and to spread their wood costs over a wider range of products. Likewise woodpulp producers might well enter the lumber or plywood industries rather than continue their selling sawlogs or peelers to firms in those industries. The growth of existing firms in the pulp, paper, and board industry will also likely continue to result in both a larger number of multi-mill firms and an increased number of mills operated by each of the larger firms.

Partly as a result of the increase in average mill size and the pressures to operate these mills close to capacity, the regional and even national movement of pulp, paper, and board appears certain to continue. The tendency for the large firms to specialize in certain products in each of their mills or in each of their machines, and for smaller firms to specialize in certain products will further tend to result in inter-regional movements of the various types and grades of pulp, paper, and board. The continuation and possible intensification of national movements of these products will tend to continue or to increase competition among sellers of these products in all regions of the country.

Competition for markets for the various types and grades of products of the industry will be further intensified by continued developments in multi-purpose machines with even wider degrees of flexibility among grades than at present. The existence of many large firms serving a national market with machines and equipment that can easily be switched from the production of one type of product to another and one grade of product to another will tend to result in intense competition for markets in all regions of the country.

As a result of various forms of competition such as: actual competition among firms within each segment of the pulp, paper, and board industry and among firms in this industry and firms in industries producing substitutable materials; actual competition between domestic producers of identical and substitutable products and foreign producers; and ever-present potential competition by new entrants to the domestic industry or additional foreign producers—new pulp, paper, and board products and products of even better quality than at present are likely to be forthcoming in future years at the lowest possible cost.

The need to produce at competitive prices will tend to result in the profitability of the industry remaining at relatively modest levels as compared with other manufacturing operations of comparable risk. However, profitability should be sufficiently high to continue to induce additional investment capital to provide facilities to fill our rising national demands for pulp, paper, and board at competitive prices.

Meeting the Demand

Closer Utilization of Trees Cut

One means of meeting anticipated pulpwood demand is with use of sawmill residuals saved from waste

By R. E. WERTHEIMER
Longview Fibre Co.

• Some years ago, the phrase "Saved From Waste" was coined and adopted by Longview Fibre Co. as a meaningful slogan, expressing in three words the substance of our raw material procurement program.

During the past three or four years, much has been written about the business of using mill leftovers, some from the point of view of the machinery supplier, some from the point of view of the chip maker or seller, and others from the point of view of the professional conservationist.

This discussion is based on the experience of a user of mill leftovers whose diet consists of about 80% mill leftovers saved from waste and the other 20% logs. The experience of Longview Fibre Co. in the use of mill leftovers may be useful to others in the development of their plans of similar nature.

Longview Fibre Co. entered into a

CHIPS FROM SAWMILL WASTE is latest utilization trend of industry.

continuing form of contract in 1926 with Long-Bell Lumber Co. for rights to pick wood out of its sawmill conveyors, and with that source of raw material available, built a kraft pulp mill and a cylinder board machine next door to the Long-Bell sawmill at Longview, Wash.

Since this start, Longview Fibre has expanded its production to a total capacity of 900 tons per day—produced on six machines. Originally the Long-Bell residuals supplied the entire requirement of wood. Presently, Longview Fibre has some thirty-six suppliers in addition to Long-Bell.

Douglas fir is the predominant species used for the production of lumber and plywood in Oregon and Washington. Consequently, paper products that can be made satisfactorily of Douglas fir have been developed by our company.

We find that some papers can not be made with the properties desired from Douglas fir; for those grades we use either Ponderosa pine or hemlock, or a mixture of fir and these other species. We get the pine in the form of chips made from sawmill residuals, and we get the hemlock chips mainly from logs.

MEASUREMENT OF CHIPS — Sooner or later in a discussion of purchased chips the question of measurement arises. In the contract with Long-Bell Lumber Co., made in 1926, Longview Fibre pioneered in the development of the "weight" unit of measurement for chips. In 1926, many 128 cu. ft. cords of clean Douglas fir sawmill waste wood were picked from conveyors at the Long-Bell plant, stacked closely on pallets, and bone dried in the Long-Bell dry kilns. They were then weighed, and it was found that a 128 cu. ft. cord when bone dried weighed 2,400 lbs.

All chips bought since 1926 from Long-Bell (over 2,000,000 units) have been weighed, moisture sampled and paid for on the basis of the 2,400-lb. bone dry unit. This unit of measure has come to be known as the "bdu."

The other unit of measurement used in the Northwest is the 200 cu. ft. unit. This method of measurement is unsatisfactory because the amount of compaction of the chips can affect the weight of a 200 cu. ft. unit by as much as 25%. Most major users of chips in the Northwest are now making contracts for chips based on the 2,400-lb. bone dry unit and not the volume unit.

Actual determination of chip quantities by bone dry weight are, at Longview Fibre, accomplished by weighing, both full and empty, the rail car or truck, as the case may be, on a 250,000-lb. capacity railroad scale located adjacent to the unloading point.

A continuous sampler has been developed to take a truly representative sample, weighing about 4 lbs., of the chips unloaded. This sample is weighed as taken, bone dried in a specially constructed oven to constant weight, the percent moisture determined, and the necessary calculation made to reduce the wet chip weight in the vehicle to a bone dry basis. This figure, divided by 2,400 lbs., gives the number of bone dry units, or bdu, in the car.

The use of the bone dry unit as the unit of measure involves a rather considerable capital expenditure for railroad scales, samplers and trained personnel, and this fact practically precludes such measurement at any seller's plant.

Longview Fibre Co., realizing that this fact forced the buyer into the unusual position of telling the seller what quantity of chips he has sold, installed the most dependable equipment obtainable and devised methods that eliminate human error to the greatest extent possible. Sellers are, of course, welcome at all times to view the installation and witness measurements.

The [illegible] considerations in the purch[illegible] chips made from sawmill residu[illegible] are as follows: (1) Dependabilit[illegible]. (2) Transportation. (3) Diversity of sources.

SOUR[illegible] CHIPS — As to dependability [illegible], not much need be said. It is obvious that a source which is unlike[illegible] operating is undesirable. Still, there are many good sources with which Longview Fibre has contracts that have only moderate owned timber supplies. However, they are generally situated so that they are the most likely contender for national forest or other government timberlands. It is our feeling that dependability of source may be more closely connected with agile and competent management than with large timber ownership.

CHIP TRANSPORTATION — As to transportation, this is a broad and important phase of chip procurement. About 80% of the more than 400,000 bone dry units made from residuals needed annually by Longview Fibre are transported by rail. Over 500 specially equipped rail cars are assigned to Longview Fibre service. These operate on hauls of from 50 miles to 260 miles.

The average round trip time for a rail car is about twelve days from the time it is delivered to a supplier's plant until it carries its load of chips to Longview, is unloaded and returned to the supplier's plant. As in excess

of a thousand carloads of chips a month are used and as most sawmills run five days a week, these cars must be unloaded at the rate of about 50 a day, or at least a car every half hour. A car holds about 20 bone dry units.

Transportation costs in some instances approach the cost of the chips. Consequently, from the user's viewpoint, proximity of supply is very important. Also affecting transportation costs materially is the degree of compaction of the chips in the rail cars at time of shipment.

Rail rates are based on the number of volumetric units of car capacity—arrived at by dividing the stencilled cubic capacity of the car by 200. If chips are loaded loosely in a car, the car might contain 16 bone dry units, while if the chips are well compacted, it is quite possible to get 21 bdu in the same car, an increase of 31%, with a consequent saving of 31% of the freight cost on that car.

Maximum compaction of chips would occur if every chip lies flat on its side and next to every other neighboring chip, if there are no voids between the chips, and if there are no chips standing on edge. This sounds like quite an order. Actually, this result, to greater or lesser degree, can be obtained by a variety of methods.

The simplest and a surprisingly effective method is to permit the chips to flutter down into the car from a height of about 10 ft. above the top of the car, while the car is being slowly reciprocated under the filling area. This fluttering has the effect of causing most of the chips to land on their flat sides, and the car reciprocation permits the car to build up uniformly. Without reciprocation of the car, cones will build up which, when they topple over, cause loosely filled cars.

Another and even more effective method of compaction is by the use of air at a few pounds pressure. An economical method of "in plant" transportation of chips is by heavily charging a stream of air at velocities in the magnitude of 6,000 to 7,000 fpm with chips. Surprisingly large quantities of chips can be transported long distances through small diameter, light gauge steel pipe. For example, 12 bdu per hour can be carried in a 5 in. diameter pipe for distances of 200 ft. for about 30 hp. The velocity of the air stream and chips when directed into a reciprocated car will give very satisfactory compaction.

A "DOZZERMOBILE" boosts chips from storage to digester line.

Two types of rail cars are used by Longview Fibre; a drop bottom gondola with sides extended 6 ft. above the top of the steel "gon," and 50 ft. box cars which have had 9 top hinged doors placed in each side.

These latter cars are permanently equipped with 3 angle iron plows which cover the full bottom of the car and are pulled back and forth at the unloading point to facilitate the unloading. Slope sheets in the ends of the cars prevent dead pockets which would require hand unloading, and 2 crosswise partitions separate the car into 3 compartments. The gondola cars are arranged to receive two 5-hp vibrators attached at time of unloading which help to make the compacted chips flow.

Thus far in the development of the residual chip program, there has been no standardization between chip buying mills as to rail cars. This is because each plant has had its own ideas as to the best unloading techniques and, for this reason, the rail lines have been unable to develop car pools, and thus the individual companies have borne the cost of converting cars to chip use.

In the case of Longview Fibre, the gondola conversion has cost about $550 per car, and in the case of the 50 ft. box cars, from $750 to $850.

It was mentioned earlier that 80% of the chips made from residuals were transported to the plant by rail. The other 20% are transported over the highways in large tractor drawn "semi-trailers" for distances up to 50 miles.

Rail transportation for the same distances is more economical; however, there are some closeby sawmills and plywood plants which are not on rail and which have significant quantities of residuals. A fleet of a dozen large highway tractors and some 25 trailers, holding about 8 bdu, are in regular service.

Unloading highway trailers at our plant is a simple matter. The front end of the trailer is lifted by an overhead hoist so that the body of the trailer is at a 50° angle, and the chips avalanche out the tail gate into a conveyor served pit. This entire operation takes about 10 min. per load.

Upender Unloader

It takes no more than 10 minutes to hoist the front end of a highway trailer and dump its load of chips in to receiving pit.

DIVERSITY OF CHIP SOURCE — From a buyer's point of view, it is desirable to have a large number of chip suppliers, none of which are larger than, say, 10% of the buyer's total requirement and whose types of business cover the whole range of the wood working industry.

Attention can well be given to as much diversity of union affiliation as is possible in making contracts, including

non-union and cooperative establishments. Thus, the effect of labor disturbances on chip supplies will be minimized.

As to types of wood working industry with residuals available, the list is, of course, led by the sawmills. Plywood and green veneer plants, however, have the advantage of the lowest capital cost for chip manufacture of any of the industries. Barrel and wood specialty plants may also have relatively large quantities of residuals.

An important source of chips comes from the development of a central chipping establishment. Longview Fibre Co. has built just north of Eugene, Ore., a concentration yard, consisting of unloading and storage facilities for clean wood in lengths up to 20 ft., and a chipper and car loading facility capable of producing about 3,000 bone dry units per month, when running on a 1-shift basis, or about 7 to 8 carloads per day.

Presently, a posted price, which has remained constant for the past three years, induces a sufficient number of truck owner to make their own deals with sawmills within a radius of 30 miles and truck the wood to our plant, where it is chipped, loaded in cars and shipped to Longview.

CHIP STORAGE – We found storage facilities for chips to be an important phase in the development of our program of supplying our mill with chips saved from waste. Many uncontrollable events conspire to make deliveries of chips irregular as to quantities. Generally speaking, sawmills, and particularly small ones, operate at higher output in the summer months than in the winter. Storms, snow and excessive rain have an effect on log procurement and on transportation and can swing chip receipts up or down by 50% or more.

Labor interruptions last summer caused a 12-week shutdown of 60% of our chip suppliers; the other 40% were either cooperatives or non-union and kept operating.

Rail cars, in spite of careful traffic control, seem to have a diabolical habit of getting bunched on one end of the line or other, with a feast-or-famine result. The cure for all of these ailments is adequate storage.

Longview Fibre Co. has blacktopped an area of about 3 acres, on which by means of trucks and a bulldozer about 25,000 units of chips can be stored. This is somewhat less than a month's requirements and so far seems to be adequate. We have not had chips in storage for longer than a year. Up to that time no significant loss in quality is noted.

Reclamation of chips from the storage pile is accomplished with a large rubber-tired diesel-driven scoop device, descriptively called a "dozzermobile." This machine can readily reclaim at the rate of 60 bdu per hour.

Further development of the use of residuals in the Pacific Northwest will, in large measure, depend on the additional requirement of the users of this material. In other words, few, if any, users of Douglas fir are now using any substantial quantities of fir logs for pulp, unless for woods cleanup.

Development of barking and chipping equipment specifically for production of chips from residuals is making good progress and will, no doubt, enable the smaller mills eventually to participate in the "Saved From Waste" program as the need for their residuals develops.

Increased Use of Hardwoods

Another source of meeting pulpwood demand will be through utilizing and increasing use of hardwoods

By R. J. PRESTON
Dean, School of Forestry
North Carolina State College

● Hardwoods today constitute a tremendous reservoir of available pulpwood which in the overall picture is hardly being touched by today's consumption. The best available figures indicate that the third of the United States designated as the East or North today supports a total supply of 69 billion cu. ft. of hardwood as compared with 25 billion cu. ft. of softwood, and the area designated as the South has an estimated 73 billion cu. ft. of hardwood as compared with 58 billion cu. ft. of softwood.[1] The supply of hardwoods in the West is so small (3 billion cu. ft.) as to have no important effect upon total supply.

Of this total reservoir in the South and East, of 142 billion cu. ft. of hardwood, only about ¾ billion cu. ft. of hardwood (or 3.5 million cords) were pulped in 1952 and this constituted only 14% of the total pulpwood consumed.[1]

The supply of hardwood pulpwood today is then very large, apparently increasing and is relatively little used. This supply offers the pulpwood industry the greatest source of raw material for any program of expansion.

NEXT 50 YEARS HARDWOOD SUPPLY – Many factors are at work which will in all probability make the supply of hardwood an increasingly important source of pulpwood in the future than it could become under present conditions. These factors include:

(1) **The very rapid rate of conversion of pine stands to hardwood stands.** In those portions of the Southeast which have been resurveyed it was found that in a period of approximately 15 years the forest area in hardwoods had increased from 17% to 29%[2]. A conversion rate of nearly 1% per year. Indeed in two states where information has become available within the past year, this problem of conversion to hardwood lands appears to be increasingly severe.

Forest survey statistics for Georgia show 34% of the commercial forest area in hardwoods, an increase from 22% in the 1936 survey.[3] A paper based on results of the Timber Resource Review in Virginia indicates that between 1940 and 1953 hardwoods increased 38% in cubic volume while pine decreased by 16%[4].

If this change were applied to the entire South, and for purposes of rough comparisons I believe this could be justified, it means that in the approximately 200,000,000 acres of forest land in the South about 24,000,000 acres of pine has converted in hardwood stands in the last fifteen years.

There are factors at work which indicate this rate of conversion may increase in the future. Improved fire control certainly favors the natural succession of pine to hardwoods, and

Hardwoods Are Wood, Too

Industry has learned that hardwoods make good pulp, too. Furthermore, increased use of present hardwood stands will make more softwoods available for the future.

modern farming techniques and widespread fertilization of field crops could well reduce the rapid depletion and abandonment of cultivated fields prevalent in the past.

This conversion of pine to hardwood stands faces the pulp and paper industry with a severe challenge which must be solved in the near future if the industry is to continue to depend mainly on softwoods.

(2) **The rapid increase in the volume of cull hardwoods.** The resurveyed portions of the Southeast indicate that the volume in cull hardwoods nearly doubled between surveys, making up nearly 23% of the total hardwood volume at the time of the resurvey[2].

While not suitable for lumber, a large percentage of this great volume of cull hardwoods is acceptable for semi-chemical pulping, and pulping offers about the only large scale commercial method for removing this low value material from large areas that are not now productive.

(3) **Available figures indicate that growth of hardwoods far exceeds drain,** whereas volume growth and drain figures for softwoods are more nearly in balance. Again referring to that portion of the Southeast where the resurvey has been completed, hardwood growth exceeds drain by 90%[2].

(4) **Improved management practices for hardwood stands will still further increase the volume of available hardwoods.** Relatively little has been done up to the present time in managing hardwood areas, but I am convinced that this period of neglect is at an end and that the next 25 years will see the development of hardwood management practices that will be as far reaching as the development we have seen in the management of pine stands in the last 25 years.

The recent establishment of a federal hardwood research center in Georgia and the unique threeway cooperative hardwood research program just underway in North Carolina between the furniture industry, the Duke Power Co. and the Southeastern Forest Experiment Station indicate that the period of apathy as regards managing hardwood stands is at an end.

One major field of research which I believe will have a major effect in increasing growth of both hardwoods and softwoods is forest genetics. Quite a bit of research is now underway with softwoods; however, hardwoods have been largely ignored up to the present.

The School of Forestry at North Carolina State College is making a serious effort to initiate a cooperative program in forest genetics with the pulp and paper companies and we believe that major effort should be directed toward hardwoods.

THE DEMAND FOR HARDWOOD PULPWOOD – The growth of the pulp and paper industry in the United States during the 20th century has been one of the marvels of our industrial development. Production has roughly doubled decade by decade and this growth has been particularly striking in the South, where pulpwood consumption increased from 1¾ million cords in 1930 to over 16 million cords in 1953[6].

This 16,127,000 cords produced in the South constituted 61% of the domestic production and was 11% greater than in 1952 and 15% greater than in 1951, indicating that the period of expansion is by no means over[6]. New plants are being built each year and old plants are expanding production. The Stanford Report prophesies that by 1975 the present consumption of 18 million tons of wood pulp in the United States will double to 36.1 million tons[3].

INCREASING HARDWOOD USE – As previously noted, hardwoods today play a minor role in the production of pulpwood, making up but 14% of the total pulpwood produced. Several factors should be considered which will increase the importance of hardwoods in the future.

(1) Semi-chemical pulping is relatively a new process and is proving versatile and adaptable to many uses not at first contemplated. The Stanford Report estimates a sixfold increase in semi-chemical pulp, from 0.8 million tons in 1952 to 5.2 million in 1975[3]. This is the largest increase both by tonnage and percentagewise estimated for any type of pulp.

Hardwood species have proven particularly well suited to semi-chemical pulping and the bulk of increase in this method will undoubtedly be the hardwoods. Expanded hardwood use is also anticipated in other processes including sulfate pulps and chemi-groundwood pulp.

(2) Softwoods are now being used nearly to the extent of growth, and in some sections drain exceeds growth. In a thought provoking address to the American Paper and Pulp Assn. in 1952, Frank Heyward raised the question: "Can the South sustain an annual pulpwood drain of 18 million cords?"[6]. As we have seen, the 1953 production of pulpwood in the South exceeded 16 million cords and the Stanford Report estimates that this will expand to 30 million cords by 1975[3]. If 18

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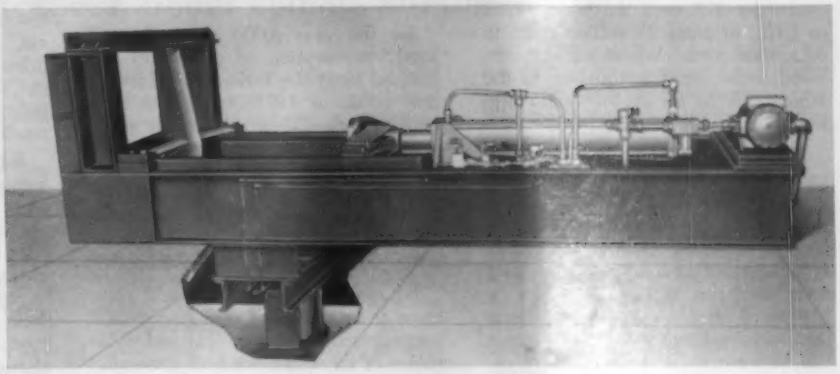

. . . Utilize Slabs and Edgings

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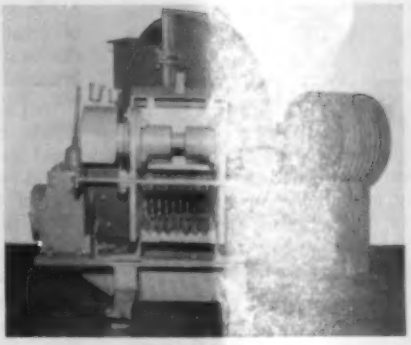

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million cords posed a problem, what about 30 million cords?

EXPANDED PULPWOOD CONSUMPTION – The Stanford Report estimates that softwood pulpwood consumption in the United States will increase by 67% over the period 1952 to 1975, or from 21 million cords to 35 million cords[1]. Where will this softwood come from, as the bulk of the increase is to be in the South and East?

Granting that improved management practices will increase growth per acre, that the great pine planting program in the South will cover millions of acres, that poisoning, bulldozing and other treatments may in part counteract the conversion of pine to hardwood, is there reasonable hope that softwood pulpwood consumption can increase to 35 million cords?

Heyward made a splendid case for the difficulty of sustaining a production of 18 million cords for the South, and 22 million cords of pine and 8 million cords of hardwood are estimated for this region's production in 1975.

If the conversion of pine to hardwoods continues at the same rate in the future as it has since 1929, and I believe that it probably will, in my opinion there will be far less pine available than at present in spite of increased growth per acre, poisoning, planting, and all other present efforts. I do not believe this factor of hardwood conversion was considered in the Stanford Report.

The Stanford Report does estimate a great increase in the consumption of hardwood pulpwood, from the present 14% of the total to 26% in 1975. In cords this means an increase from 3% million cords in 1952 to 12% million cords in 1975, a 250% increase[1].

The greatest increase in hardwood consumption is foreseen in the South where the increase will be from 1.8 million cords in 1952 to 8 million in 1975 (an increase of about 350%). Hardwood consumption in the East is expected to increase from 1.7 million cords to 4.5 million cords during this same period (an increase of about 165%).

HARDWOOD PERCENTAGE TO INCREASE – In humility and trepidation I set forth my conviction that this estimate of hardwood pulpwood constituting 26% of total consumption in 1975 is low. This factor of rapid conversion of pine areas to hardwoods will force the percentage of hardwood up as will increased competition for pine for uses other than pulp.

Pine, with the great demand on it for lumber and other products, will become increasingly scarce and costly. May we not look forward to a time when softwoods play a minor role to hardwoods in the pulp and paper industry.

By the year 2,000 the estimated total consumption of pulpwood has jumped from the estimated 55.4 million cords in 1975 to 87.6 million cords[1]. Presumably population pressures (212,000,000 by 1975, 280,000,000 by 2,000) will progressively reduce the forest area[1]. Where will the pulp and paper industry find 87.6 million cords in the year 2,000 and what percentage will be hardwoods?

By and large, softwoods will continue to be preferred over hardwoods for pulpwood. Management and utilization of softwoods are both generally easier than with hardwoods. Most sites will grow greater volumes of softwood fiber per acre per year, on many sites the ratio may be 2:1 or greater.

Most manufacturers would prefer to see this trend toward greater use of hardwoods reversed. This is a matter of great concern to the industry and one in which large sums of money are involved.

As I see it, there is one line of action which could appreciably slow the trend and possibly even reverse it. It would require a gigantic effort on the part of industry, but might well be worth the cost and effort.

Briefly, this action is to increase the present use of hardwoods in order that more pine and softwoods may be available in the future.

Heyward has shown that in 1951 some 71% of Southern pulpwood came from the holdings of small landowners[6]. By 1966 he shows that Southern industry can cut only 30% of its requirements from its own land. Industry is going to be forced to depend upon the small landowner for the bulk of its raw material.

It is well known that the poorest forestry is practiced on these small holdings; that many of these small holdings are only partially stocked; and that hardwoods are rapidly taking over many softwood stands. The productivity of these small holdings is the crux of the supply problem.

Heyward suggested that each mill budget 30 cents per cord of wood to go toward the better harvesting and management of the tracts of small owners with the expectation of increasing the growing stock, especially of softwoods. This appeared to be an excellent suggestion, but apparently it did not appeal to management as no steps were taken to implement it.

PROGRAM TO IMPROVE FOREST PRACTICES – I would like to suggest for consideration an alternate proposal. No funds would be specifically set aside to manage the small owners tracts. Instead, using company foresters, association foresters, and any other available and qualified personnel, set up a program to buy hardwood pulpwood in addition to pine from the small landowner.

Buy it only providing this landowner agrees to get the harvested acres back into the desired species by planting, poisoning, or whatever methods are called for. Company and association foresters can set up programs to enable small landowners to put their lands into full production. By buying standing hardwoods the cost of conversion can be met.

Most landowners will welcome such a program as they now know how lucrative well managed forest stands can be. The companies will be insuring future supplies of desired species. The cost will be the purchase of some hardwood from small owners, and nearly all companies are now using some hardwoods. Tree farm and tree farm family programs could be pushed.

To me this program is a sound investment, it makes sense. I don't believe the companies can longer afford not to follow some program to get full productivity from the small landowner.

REFERENCES

[1] Stanford Research Institute. 1954. *America's Demand for Wood, 1929-1975.* Weyerhauser Timber Co., Tacoma, Wash. 404 pp.

[2] Demmon, E. L. 1953. *Trends in Southern Hardwood Forestry.* Southern Lumberman, Dec. 15, 1953.

[3] McCormack, J. F. and Cruikshank, J. W. 1954. *Forest Statistics for Georgia, 1951-53.* U. S. Forest Service, Southeastern Forest Experiment Station. Forest Survey Release No. 44, 77 pp.

[4] Dean, George W. 1954. *Pine Situation Becomes Critical.* Virginia Forests, Inc., Richmond, Va. Feb. 4.

[5] Demmon, E. L. 1955. *Changes in the Forest Situation Between Surveys in Florida, Georgia, and South Carolina.* (Address before Annual Meeting of the Southern Pulpwood Conservation Assn., Atlanta, Ga. Jan. 19, 1955).

[6] Heyward, Frank, 1952. *Can the South Sustain an Annual Pulpwood Drain of 18 Million Cords?* (Address before Annual Meeting, American Paper and Pulp Assn., New York, N. Y. Feb. 19, 1952).

[7] Cruikshank, J. W. 1954. *1953 Pulpwood Production in the South.* U. S. Forest Service, Southeastern Forest Experiment Station. Forest Survey Release No. 43. 32 pp.

More Intensive Forest Management

Meeting demand for pulpwood through improved management practices, better cutting, fire prevention

By E. T. F. WOHLENBERG
Prof., Industrial Forestry
Yale University

● First of all I am going to give you a general picture of a few of the important areas involved and then make some suggestions on what might be done in these areas. Naturally these suggestions will have to cover whole regions and can only be based on very broad principles.

I have spent practically all of my life in the West and I hesitate to tell people in other parts of the country what to do. In order to bring out what I am driving at I will conclude my talk by telling you what actually has been done on a large operation in the West which is confronted with many of the problems you are trying to solve. In this way we will go from general principles to the specific measures which may be of some value in other regions.

In order to limit the areas of country somewhat I have selected for discussion the regions where the pulp industry is fairly well established and where there is apt to be more expansion in the next 25 years. I have worked out a few statistics in round numbers which indicate the trends.

THE OVERALL PICTURE — The regions under consideration are: New England, Lake States, the Douglas Fir Region in Oregon and Washington, California, the South.

In these regions there are about 18.5 million acres of old growth timberlands, while second growth and pole stands cover over 185 million acres. Small ownerships vary from 30% of private timberland in California to 70% in the South.

It is important to realize that this analysis indicates an area of young timber, exclusive of seedlings and saplings, which is 10 times as great as the remaining old growth. I do not think this is bad but rather that it is a real promise for the future if it is handled correctly.

From the standpoint of forest management these 185 million acres of young timber are the important stands to deal with over the next 25 years. After these areas are taken care of there are 61 million acres of seedlings and saplings, plus another 60 million acres of poorly stocked stands, which must eventually be put under good forest practices. I will deal with the 185 million acres of young timber mentioned above.

Because of the presence of other wood-using industries and the large number of small owners in these areas, there is now and will continue to be considerable competition for the wood which is available.

The lands now owned by the pulp companies will not solve the problem. In most cases outside wood is required. Types of forest management used in these areas at present vary from clear-cutting and planting to intensive selective cutting. Good forest management can take many forms. The same thing is also true of bad practices.

The programs to improve forest management which are being carried on in the various regions by the larger wood-using industries are mostly good in principle. Examples of what is needed were given you for the South by Frank Heyward in 1952. Mr. Heyward's paper was entitled "Can the South sustain an annual pulpwood drain of 18 million cords?" This paper brought out many of the problems in the South. Basically, you have about the same problems in other regions and attempts are made to solve them in various ways.

The pulp industry because of its heavy investments has often been the leader in good forest practices. Many of the large companies in the lumber industry have also carried on good practices on their own lands. Good forestry should also be practiced on the small ownerships which will average close to 60% of the private timberlands for most of these regions. The present programs are not on a large enough scale to get the necessary results in the desired time.

It appears that in all regions the wood-using industries, with the pulp industry as a leader, should greatly expand many of their programs in order to get good practices on the large areas of young timber on private lands, both for large and small holdings.

IT TAKES LITTLE TREES to make big trees for pulp.

TO IMPROVE MANAGEMENT — To accelerate the promotion of good forest management for these areas the following suggestions are made:

(1) Each wood-buying member of the pulp industry should have an annual budget which will take care of his own situation. This means his own land as well as the land from which he purchases his wood. Other large wood-using industries in the area should be encouraged to do the same thing.

(2) The highest type of forestry should be practiced on all of the large holdings. It is believed that cooperation in industry could bring this about.

(3) The best methods which are developed in each region should be publicized and encouraged on small

holdings.

(4) The activities of such organizations as the Southern Pulpwood Conservation Assn. should be greatly expanded. There are similar organizations working in other regions.

A few of these organizations are: The New England Forestry Foundation in the Northeast; Western Farm Forest Cooperatives in the state of Washington; Industrial Forestry Assn., in the Douglas fir region; Western Pine Forestry Program in the Western states; Western Forestry and Conservation Assn. in the Western states; American Forest Products Industries, in the United States.

In 1953 the SPCA contacted over 5600 owners and 5,500,000 acres were involved. In order to keep pace with cutting, this program should be more than doubled and the same thing is true of activities in other regions.

One good reason for an accelerated program is that the young timber in the Northwest is already being cut so heavily that from 25 to 35% of the lumber production is coming from the second growth stands. Much of this is not cut under forestry principles. These are the important stands for the future. The same thing is taking place in other regions.

(5) There are millions of acres in these regions which have a desperate need of improvement thinnings. Handling equipment and small barkers to take care of this situation would improve growth and also yield a large volume of material.

(6) Where possible under good forest practices only larger material should be taken within certain limits. This would reduce costs and also tend to increase growth. This can only be done in fully stocked stands such as redwood, Douglas fir, and some areas in the East.

(7) Control hardwood encroachment by machinery, herbicides, and other forestry measures. The developments in hardwood pulping should help this situation.

(8) More cooperative tree farms which include many different owners should be developed. The family type of tree farm is a good example. Both types mentioned seem to be fairly successful in some parts of the country.

(9) Utilize all the chips possible from the slab piles and other waste of sawmills both large and small. This can be done by using portable chippers and other new developments in machinery. Such practices provide closer utilization and reduce demand for round wood in given areas. This tends to improve forestry practices and also acts as a stabilizer of pulpwood prices.

(10) A very intensive public relations program should be carried out which gets the entire public of any given area behind fire prevention and good forest practices. This sort of thing has paid off quite well in some areas on the West Coast.

MARKING TREES for selective cutting is part of forest management.

CUTTING PRACTICES — In order to give you some specific examples of cutting in the redwood region, I have taken a large area covering about 70,000 acres which has been developed for a sustained operation. About 40% of this area is old growth, 40% is second growth from 40 to 80 years old, and the balance younger stands and areas not fully stocked.

In the old growth you find every age from seedling to trees that are over a thousand years old. In the second growth the stands are usually very dense and badly in need of thinning and improvement cutting. Both stands lend themselves to selective cutting.

In order to give you an idea of the type of cutting, I am going to discuss several areas and give you a brief report of each.

Area 1. **Second growth with a heavy cut.** A mixture of redwood and fir about 50 years old. Cut was 24,000 ft. (about 70% fir); leave was 10,000 ft. Cut about ⅓ of the stems.

Area 2. **Second growth with a light cut.** A mixture of redwood and fir about 80 years old. Cut was 25,000 ft. (about 50% fir); leave was 41,000 ft. Cut about ⅛ of the stems.

Area 3. **Light old growth stand.** A mixture of redwood and fir. Cut was 12,500 ft. (about 75% redwood and 25% fir); leave was 18,000 ft. Cut ¼ of the stems.

Area 4. **Heavy second growth stands.** Mixture of fir and redwood. Cut was 31,000 ft. (about 40% fir and 60% redwood); leave was 60,000 ft. Cut about 25% of the stems.

Area 5. **Heavy old growth stands.** Typical redwood stand with some fir. Cut was 40,000 ft. (about 85% redwood, 15% fir); leave was 30,000 ft. Cut ¼ of the stems.

The object in the old growth stands is to take out the mature and overmature timber and leave all of the thrifty trees up to 40 or 50 in. in diameter.

In the second growth the stand is thinned out, many of the dominant trees are removed as well as trees which will not last through a 20-year cycle. The crown cover must not be opened up too much because of possible windthrow.

The objective for growth is to leave a good backlog of growing timber. At present average growth is about 500 bd. ft. per acre per year. The desire is to increase the average to about 1000 bd. ft. per acre per year. Growth in the better sites is fantastic. Measurements indicate the better areas have a growth of over 2000 bd. ft. per acre per year in many instances.

Besides the above activity, as much low grade material as possible was brought in from the woods to be used for chips and also to put the areas in better condition for fire prevention. In addition, chips were purchased from various mills in our area. These chips reduce wood costs and also have a certain stabilizing effect on the wood market.

FIRE PREVENTION — Besides our own good practices in the woods it is necessary to encourage good practices on other holdings, particularly the small holdings, as well as to have a good fire prevention organization which cooperates with the state and other organizations of this nature.

When I first came to the redwood region there was a great deal of carelessness in dealing with fire. Through the cooperation of the members of the redwood industry an organization was established which was called the Redwood Region Conservation Council. Through the efforts of this organization campaigns were carried on for better fire prevention and better forestry throughout the region which were quite effective.

In order to accomplish the desired results, it was necessary to organize redwood circles in all of the important towns. These circles were made up of a few members of the industry in each case but the bulk of the people were ordinary citizens such as doctors, lawyers, school teachers, farmers, etc. who were interested in fire prevention and better forestry practices.

The wives of members as well as

various women's organizations participate in the activities as well as the men. Youth organizations such as Scout troops and Future Farmers participate in planting programs. A Junior Logging Congress is held each year where highschool students are taken out in the woods to learn and participate in the various logging operations.

These circles meet about 5 or 6 times a year, for the purpose of discussing the problems of the area and working committees carry out the work under a secretary-manager located in the region. Forestry courses have been started in every highschool in the 9 towns where circles are located. The interest in the boys of highschool age not only creates an interest in fire prevention and forestry but also develops good local employes for industry.

The Council through its members and its efforts has changed the entire attitude of people in the redwood region on fire prevention and forestry practices. The interest of the women and the youngsters has had much to do with the success of the organization.

It is very necessary to get the public behind any good public relations program. This is important to all the regions. It may be that some of the methods used on the West Coast will be of value to other regions of the country. There is a big job ahead. If we fail to meet the requirements for fiber and wood products we will all pay through the nose.

In order to keep up with the expansion in the industry we should strive for 100 million acres in tree farms which is entirely within the realm of possibility. We should also work with at least 100 thousand small owners each year to obtain better practices on their lands.

The Next Fifty Years

PANEL MEMBERS (left to right): W. E. McCRAW, Caterpillar Tractor Co., E. B. HURST, Consolidated Water Power and Paper Co., chairman, W. H. SEYMOUR, Liberty-Mutual Insurance Co., R. E. CANFIELD, Wise, Corlett and Canfield.

Safety, Training — and Insurance

How a loss prevention program in pulpwood production can be planned, and will reduce insurance costs

By W. H. SEYMOUR
Liberty Mutual Insurance Co.

• The subjects of safety, training and insurance in the woods have always commanded my deep interest. It was, therefore, a pleasure to supplement my knowledge in this field by reading the Pulpwood Annual for 1954, the APA Organization Directory, the Technical Committee's Report, the Training Manuals and the Training Guides.

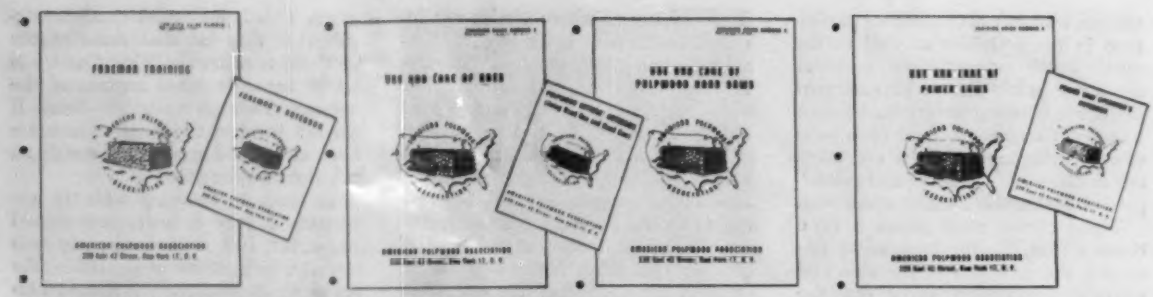
I must confess that, after reading these, it seemed to me that APA technical thinking corresponded so closely to mine that there was little left for me to contribute, and that I must content myself with expressing admiration for its reach and grasp. However, my mind was changed at the last moment when I noticed one little item in the report that showed the frequency of accidents in woods operations to be around 70%. Here, at least, was a flaw which I might in some small degree help you to mend.

INDUSTRY'S PROBLEM—Now this accident frequency of 70-odd might benefit from the analysis of an outsider like myself, such analysis being aimed at finding out why, with such outstanding technical contributions as I have mentioned, do we not have a better record.

Our first step must be to ask whether our material is at fault. My answer to that is a categorical "no" and I do flatter myself that I know material. As I have indicated, I myself would have offered the same technical approach.

Very well then, we have examined our material and found it good. Is not, then, the next proper step to inquire as to its application? The best material in the world is useless if it is not applied—or is misapplied. I am, therefore, forced to the conclusion that, either the pulpwood companies, large and small, have not accepted the material whole-heartedly, or they are not applying it whole-heartedly.

Now I do not wish merely to indulge in destructive criticism. Any comments I have made were merely intended to clear the path for a constructive approach. And I want you to know that I am fully aware of the difficulties inherent in an industry which has changed, and is changing,



THESE BOOKLETS are samples of APA's intensive safety training program.

more rapidly than any that I know. I will go further, and say that I have the greatest admiration for the improvements and mechanization which you people are putting into effect. Yet still that frequency figure of "around 70" shows that they are not enough.

THE ELEMENT OF CHANGE—Let me expand on this phenomenon of change that is taking place in your industry. I am highly conscious of this element of change, since I have been close to this industry and we, as a company, have tried to be of service to you in meeting it.

Let me refer to an experience of ours which I think you will appreciate. Not many years ago, in the interests of operational training and safety, we made a motion picture in cooperation with the Brown Company called "King Spruce," and at that time it was the only safety film on woods operations. I consider this film today to be an antique.

Somewhat later we made another picture in cooperation with the same company, called "The Forest and The Woodsman," and from what I see of the trend of change and mechanization this, too, will become obsolete very soon.

I would like to suggest that perhaps your trouble and mine is that our efforts are all dated in an industry that is not interested in dates. There is, to my way of thinking, only one answer to this dilemma, and that is to make sure that our thinking and our doing are flexible enough to take care, not only of today's problems, but the shadow of things to come. We must have our industries so organized that they are not only able to apply their technical knowledge effectively, but in a pliable manner as well.

Nevertheless, even with a maximum of effectiveness and pliability, your organizational problem is still complex. Indeed, in your accident prevention work you have what might be termed a dilemma within a dilemma.

I refer here to a by-product of your trend toward mechanization, namely, the need for introducing mechanics into the picture. This class of workers also has accidents—so that while you are reducing manual handling accidents through mechanization, the problem is not solved. Far from it. Certainly I do not need to remind you that the machines you are installing have the capacity for much more serious type injuries—unless you learn how to live with the machines. So your industries find themselves in a situation where, the moment one hazard is surmounted, another looms ahead.

Yet we should not be too discouraged. Actually, this complex and shifting situation dissolves itself into two elements: the man, and the machine. Concerning the man—you enter here into the question of what motivates the man. He must be dealt with as a variable, who will not yield to the precise techniques applicable to the machine. What is primarily indicated here is a friendly, man-to-man approach which makes your worker want to operate in a safe manner.

To turn to the machine—it seems to me that your industries are getting closer to the manufacturing type of operation; what we might call "Plants Without a Roof." In fact, you are developing so fast in this direction that probably many things that you work on today for safety are out of date before they are used. Now in this sphere the machine is king, and I need not point out that the machine is not human, and cannot be reached by talk or reasoning or motivation approaches. The only thing that this equipment responds to is good maintenance, careful check-up, and operation in the best manner known for safety.

PLANNING A LOSS PREVENTION PROGRAM—As I continued to study this complex problem of your industry, in terms of the man, the machine, and overall safety, I could not avoid the conclusion that perhaps what might be missing was a frame-work to which all this excellent know-how of yours might be attached.

I felt that I might perhaps make my greatest contribution to your group along these lines, bearing always in mind that our framework must be resilient—able to bend without breaking under the weight of new problems. What kind of a frame-work do I mean? Well, I mean one that if, say, you are using a portable barker in the woods today and yet tomorrow may shift to a portable chipper, the framework will continue to stand up under this shift.

This is but one illustration; more come quickly to my mind. When I read about your plans for farm harvesting and insect control, your aerial planting, more and bigger mechanization for material handling, I again see the need for a framework.

Then I glance through the old Directory of Logging Equipment that started with axes you got from a blacksmith, only to find it replaced with a 50-page directory from the manufacturers of logging equipment.

I can envisage the need for more and better hard roads because of the weight and size of power equipment—roads that in turn create accidents in the course of their construction. I am reminded that the ox-sled has been replaced and that today you don't use water for transportation—you use gasoline.

These and a hundred more transformations cry out for a framework, or we can say, a plan, which, from the management point of view will be dependable, as error-proof as possible, and ready to handle anything that might happen in future years.

Therefore I would like to offer this chart which we in my company have lived with quite a while and believe to be a good basic plan for a loss prevention program on pulpwood production (Fig. 1).

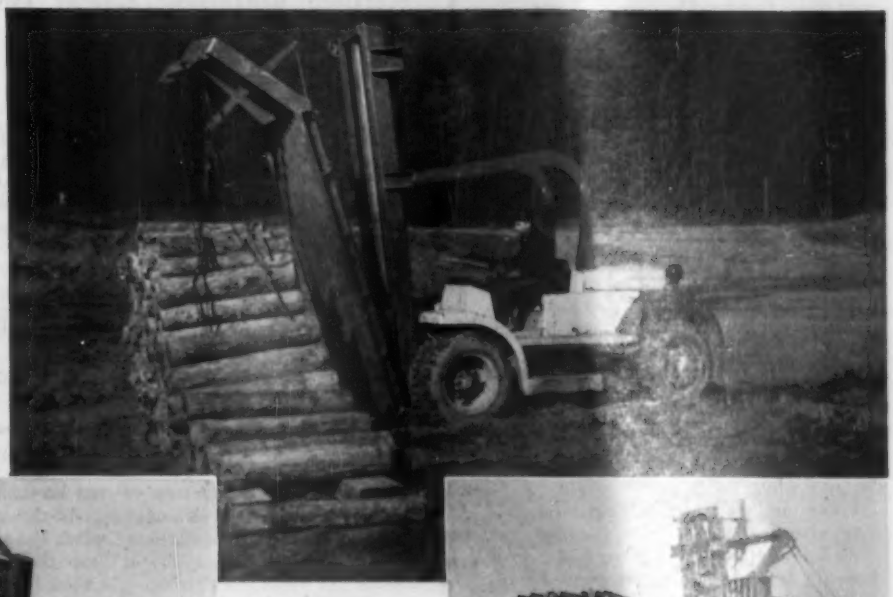
You will note the first item is "Sustained Management Support and Direction." This is the most important section of the whole "framework." It connotes that management must stay in; it cannot design a program and turn it over to somebody else to operate. The lower echelons of authority must know that management continues to take an interest in safety.

There are many ways to bring this about—by management attendance at safety meetings, by frequent letters,

2 NEW HYSTER PULPWOOD LOADERS

▼ **RC-150**

▼ **SC-180**



▲ Hyster SC-180 Pulpwood Loader, with hydraulic trip mechanism, operating over adverse ground conditions.

RC-150 Pulpwood Loader picking up load from yard storage—quickly and neatly.

Easily handles 1½-cord load.

Depositing load on pulpwood rack car.

2 Great New "Mudders"... offering "all-weather" traction and performance, increased reach, larger rugged bumping plate for faster "bumping-up"!

Because of greater reach and capacity, these new Hyster Pulpwood Loaders make possible better, faster loading—especially in hard-to-reach places, such as on the far side of pulpwood rack cars. Operates in any weather! Greater maneuverability, greater reach on "tilt", hydraulic power operated trip mechanism... are a few of the advanced mechanical features. The SC-180 is the lowest priced Pulpwood Loader you can buy in its capacity! Call your Hyster Dealer for full details.

SPECIFICATIONS		
5 FOOT NOMINAL	ITEM	
PULPWOOD LENGTH	HYSTER RC-150	HYSTER SC-180
30 in. reach 90 in. reach	10,000 lbs. (Not available)	10,000 lbs. 8,000 lbs. standard (9,000 lbs. with added strut.)
Use	For near side loading of pulpwood rack cars or barges.	For near and far side loading of pulpwood rack cars.
Trip Mechanism	Hydraulic power operated control lever provided with safety lock.	

THERE'S PROFIT IN **HYSTER POWER**

HYSTER COMPANY

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HYSTER

bulletins, contests, money incentive plans, and so forth. You know your organizations better than I do, and you know how to make sure that the people down the line believe that management is in their corner.

The second item—"Active Participation by Superintendents, Foremen, Sub-Foremen, Scalers, Clerks"—is the next phase that must be defined. These people must have definite responsibilities and definite authority on safety. I am not going to take time to discuss the various and sundry ways of assigning these duties and powers; you know them better than I do. I am simply here to emphasize the importance of such assignment.

Third, we have the subject of "Effective Employee Training." Again, this training cannot be too general in nature. We cannot go around exhorting all trades, in catchy phrases, to operate safely. This training must be specific as to the complete cycle of the man's operational duties. The safety program has to be integrated with the operations. We need to get down in our communication with the employee, just what we want him to do, and why.

I am reminded of the chap who came along and saw a fellow digging some holes in the sand and then filling them up again. The observer noticed that the first hole took 20 minutes, the next 30 and the next one 40. He pointed this out to the workman, who replied, "I know it takes a little longer to dig each hole, but if I knew why I was digging these holes and then filling them up again, I'm sure I could do it a little faster."

Now, at the risk of belaboring training, because you are using, in many places, very heavy equipment, instruction has got to be exact. For example, driving some of these very heavy rigs used in your industry is not the same as driving an automobile. It calls for specialized training. Driving trailer equipment is not the same as driving a truck. Just because a man has a license to drive an automobile does not mean he is qualified to handle those complicated vehicles.

Now for item 4—"Control of Accident Hazards." Here we start to adjust ourselves to the tremendous operational changes that have taken place in the pulpwood industry. Mechanization does not fit automatically into this industry. It must be geared to the various operations on a planned basis.

Moreover, here is the place where you adjust yourselves to future changes over the next fifty years. Here is the place where you design a built-in program that doesn't have to wait for somebody upstairs to issue a bulletin. Here you know you have got to go in and get the wood, and then get it out. Here is where we plan each step, and here is where we test the various steps to see whether unsafe possibilities have been left to fate.

BASIC PLAN
FOR
LOSS PREVENTION PROGRAM
PULPWOOD PRODUCTION

1. SUSTAINED MANAGEMENT SUPPORT AND DIRECTION.
2. ACTIVE PARTICIPATION BY FOREMAN.
3. EFFECTIVE EMPLOYEE TRAINING.
4. CONTROL OF ACCIDENT HAZARDS.
   - A. JOB PLANNING – LAYOUT, ROADS, ETC.
   - B. SAFEGUARDING OF MACHINES AND EQUIPMENT. (POWER SAWS, MATERIALS HANDLING EQUIPMENT, ETC.)
   - C. ESTABLISHMENT OF SAFE METHODS AND GOOD PRACTICES.
   - D. FLEET MAINTENANCE PROGRAM. (HEAVY EQUIPMENT)
   - E. ROAD, CAMP MAINTENANCE.
5. ADEQUATE FIRST-AID FACILITIES AND MEDICAL PROGRAM.
6. REGULAR WOODLANDS INSPECTIONS TO DETECT UNSATISFACTORY WORKING CONDITIONS.
7. INVESTIGATION OF ACCIDENTS TO MAKE CERTAIN THAT CORRECTIVE MEASURES ARE TAKEN.

FIGURE 1. Seven-step Plan for loss prevention in pulpwood production.

The control of accidents calls, among other things, for the safeguarding of machines and equipment—especially material handling equipment. This requires two lines of action. First, we have the guarding of the machine itself so that the operator may do his job without injury from the machine. Second, we have the problem of safeguarding the method of its use—or the procedure.

Sometimes we forget to take care of the latter. I think that before we had mechanized equipment a wonderful job was done on training, and the method of felling a tree, so that it was a rare occasion when we ended up with a barber-chair or a kick-back or a hung tree.

Now the establishment of safe methods and good practices applies equally to the safeguarding of machines and equipment and, as a matter of fact, is probably the item we should concentrate more on.

To cite an example, we recently had an accident in which three men were seriously injured because a truck drove off the road and smashed into a big tree. Although the original investigation described the accident as being due to carelessness of the driver, etc., the facts show that the truck had never been maintained. Its steering apparatus had been damaged due to driving over all sorts of acreage and striking all kinds of ground hazards. As a result, the truck simply could not be steered.

As though this were not enough, when the man went for the brake to stop the truck he couldn't do that either, because the floor was all cluttered up with axes and peavies. Now here is a very simple example of most of the things on which I have based my seven-point plan. It certainly shows lack of any consideration of the first four points.

Item 5, the need for "Adequate First-Aid Facilities" and "Medical Programs," is largely self-evident. Fortunately there is a tremendous amount of good information available on this item. Therefore I would like to make a few points only on this subject.

First, what is called for is not just a first-aid kit, but rather a well-planned and thought-out medical program that fits your particular type of operation. You would also do well to bear in mind that while this program must provide for treatment, it should also take placement into consideration, as well as offering something towards the emotional well-being of the employee.

As item 6, I suggest that your "Plant Without a Roof," like other plants that have roofs, require regular plant or, in your case, woodland inspection to detect unsatisfactory conditions. This is in the nature of an audit, to find out if any of these well-planned procedures which you have instituted are poorly done, in whole or in part. Down through the years this method has worked well in "Plants With Roofs."

The 7th and final item is the "In-

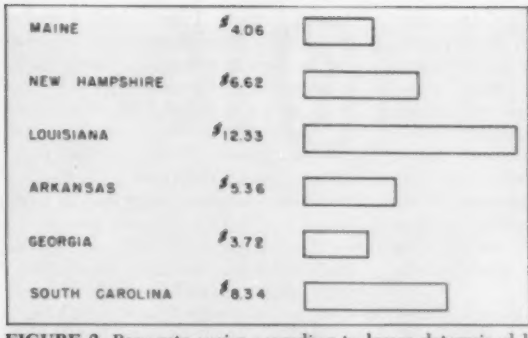


FIGURE 2. Base rate varies according to losses determined by law and effectiveness of loss control within each state.

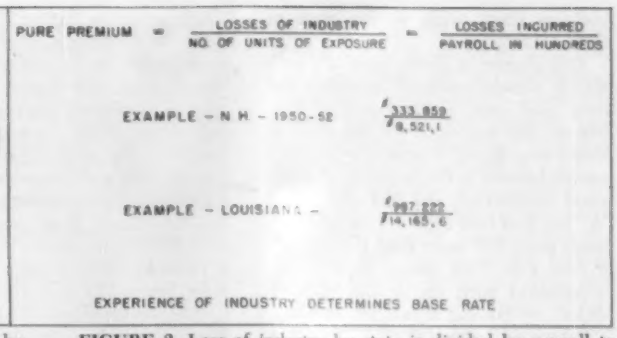

PURE PREMIUM = LOSSES OF INDUSTRY / NO. OF UNITS OF EXPOSURE = LOSSES INCURRED / PAYROLL IN HUNDREDS
EXAMPLE – N H. – 1950-52
$333 859 / $8,521,1
EXAMPLE – LOUISIANA –
$397 899 / $14,165, 6
EXPERIENCE OF INDUSTRY DETERMINES BASE RATE

FIGURE 3. Loss of industry by state is divided by payroll to determine pure premium.

vestigation of Accidents." My strong suggestion is that such investigation should be approached on the assumption that every single accident is due in part or in whole to some failure of management. For instance, if we go back to the truck accident I cited, it is plain that management failed on several scores. If faults such as these are brought under control, I think you will have a good program.

It is always a temptation in an accident investigation to blame the man for being "careless," but we haven't found out yet what this carelessness is and what we can do about it. Management, however, can plan around it. Therefore, let's assign failure to management responsibility.

Now, of course, this isn't the only way to "skin this cat" but it is a framework to help you make more effective use of the excellent material your people are producing. In addition, it will give an answer on accident control for pulp producers whether they are part of a paper company operation itself, whether the pulp is produced by large full-time producers or whether it is a matter of the so-called dealer-producer pulpwood set-up.

It makes no difference really to the insurance industry as to what method is used to produce the pulp but it makes a lot of difference to the insurance industry as to what accidents are produced and what payroll or measure is used to collect adequacy of premium.

ACCIDENT FREQUENCY RATES & INSURANCE COSTS—As I have said, the latest accident frequencies that I have seen are around the 70's for the logging industry. Now, according to the U. S. Bureau of Labor Statistics, the average for manufacturing industry is around 14. I doubt if this is a fair comparison, but I do believe that your industries may be equated with that of construction operations for heavy construction, and the frequency for this latter is in the 30's. If I am being fair here, then you still have a long way to go.

I am not discouraged over your results so far, because during the last 10 or 15 years your industry has reduced its frequency from over 100 to the 70's. Moreover, this was done at a time when you were introducing entirely new operations with new hazards and, of course, you have got to learn how to make these new operations work for you, instead of against you.

I still feel that your technical know-how is excellent; what is required now is a better implementation of this knowledge and a better individual industry program than has been used up to the present time. This is the situation in which the insurance industry finds you today.

You know the matter of the cost of compensation insurance is entirely up to the pulpwood industry.

You collectively not only make them for your entire industry in any state, but you individually make your own rate for compensation for your own operations. The chart shows a little about how these costs for insurance are arrived at. Fig. 2 shows the industry rate for woods operations in Maine, New Hampshire, Louisiana, Arkansas, Georgia and South Carolina. These are the so-called "base rates" or "manual rates."

Of these, Louisiana has the highest. You cannot necessarily say that Louisiana's accident experience is worse than any other state's. That may, of course, be the case, but you also must take the benefit level into account which vary by states.

If we take one of these rates, say New Hampshire of $6.62, that is the base or manual rate for pulp operations in that state. The make-up of this rate, or how it is produced, is shown here in Figure 3. This chart shows it is made by dividing the losses incurred by the payroll. Then this pure premium or figure is loaded by the insurance cost of handling the business or the expense portion. Now, that is the rate that everybody in the pulp

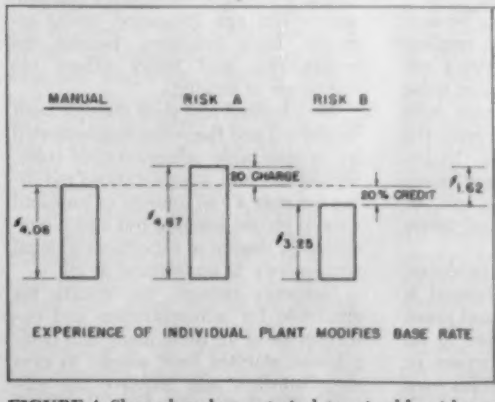


FIGURE 4. Shows how base rate is determined by risk experience.

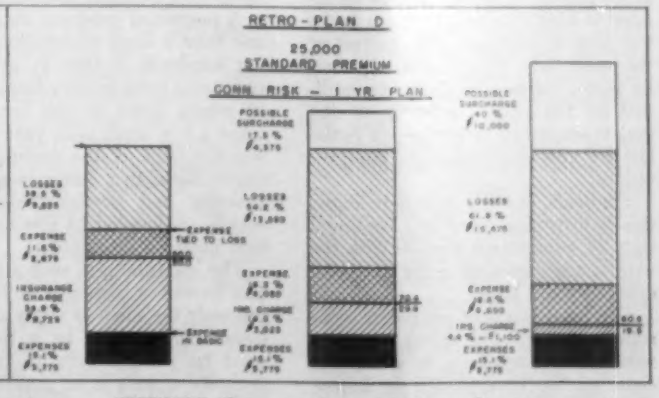


FIGURE 5. Shows premium return for good experience.

business starts with, in the state of New Hampshire.

This Figure 4 shows how an individual woods operator modifies the state base rate. The manual or base rate on the first chart for the state of Maine was $4.06. Figure 4 shows two establishments in the business of pulpwood production; the first one called "A" has had bad experiences and as a result pays 20% more than the manual or base rate. This means that this establishment ends up, in the state of Maine, by paying a rate of $4.87.

Pulpwood operator "B," on the other hand, has had a better experience and thus gets a 20% credit or reduction from the manual rate, ending up by paying a rate of $3.25.

The difference between these two pulpwood accounts is $1.62 a hundred, which is considerable. These differences in insurance costs are brought about solely by the dollar losses that risk "A" has had over risk "B" for the same relative exposure.

Risks that wish to take a so-called "Retrospective Rating Plan" can make their own rate as a result of one year's experience. In Figure 5 the left-hand chart gives the figures which show that the concern decided to have an All-Credit Plan, thus getting return premium for good experience without paying for bad experience. Also the various factors of insurance are shown on this chart. It is possible for this risk, if it has no losses, to end up with a rate of 50% of what it would otherwise be.

The center chart of Figure 5 shows a risk that wishes to buy a Retrospective Rating Plan with a possible surcharge of 17½%. This risk, if it has no losses during the year, may end up with a final rate of only 29.6% of the original rate.

The right-hand chart shows a risk that elected to take a Retrospective Rating Plan with a possible surcharge of 40%. If this risk is fortunate enough to go without any losses it will end up with a rate of 19½% of the original rate.

Now, all these plans depend on the losses. Actually I don't think it makes much difference what plan you take as far as cost is concerned. Your insurance premium for compensation is always going to depend on your losses.

I think industry as a whole spends too much time trying to find some clever "plan" that will give them a profit on insurance regardless of what happens. There is no such plan.

You cannot beat cost and if your costs are high—meaning your losses—your premium will be high. If your costs are low, premium will be low.

That is why it is so important that you do the work in your committees, and it is so important that you have a plan similar to the one I outlined—or at least a plan that will accomplish the same ends.

The insurance companies, regardless of who they are, must have enough money to pay the losses down through the years, and take care of their expenses. So, keep your losses down, and your insurance costs will take care of themselves.

What is Legal Status of Producers?

Illustrations of how legal status of a pulpwood producer can be either that of employe or employer

By R. E. CANFIELD
Wise, Corlett and Canfield

● To discuss briefly the legal status of pulpwood producers with any degree of benefit it becomes necessary to ask, first, what is a legal status and, second, who or what is a pulpwood producer?

A legal status may, I think, be roughly defined as the position of any given person at any given time as related to his rights or obligations under the laws in existance and in effect at the same time. This position may not be static, but may be shifted or modified by the altered activities of the person concerned or by changes in the law by new enactments or interpretations.

For years, as many of us here know, this industry has lived in a continual state of intermittent warfare with the various administrators of the labor and other "social" laws.

The legal status of producers, consumers, buyers and sellers of pulpwood has always been in doubt because of the uncertainties or impossibilities created by the law itself, enormously aggravated by the efforts of the enforcement officials to extend its application to every conceivable situation.

And although the atmosphere has been to some extent cleared by limited amendment compelled by sheer necessity and by a little more realistic approach by the administrators, there remain large areas of uncertainty and confusion which have a direct bearing upon your business activities.

A pulpwood producer may be anyone from a large corporation employing hundreds of men in getting out pulpwood from its own lands or those of others down to the farmer who takes a few cords each year from the woodlot back of the pasture. In between these two extremes are many varieties and combinations, all of which are familiar to you and therefore need no description.

The legal status of such a producer, as a human or corporate individual, is precisely the same as yours and mine. Generally speaking, he is free to do what he pleases with his person or property as long as he minds his own business and does not trespass upon the recognized and generally accepted rights of others.

It is only when he becomes legally an employer that he exposes himself to the burdens and perils of the mass of legislation which has been enacted during the past 20-odd years supposedly for the protection of those to whom he pays wages. These laws include those regulating and enforcing minimum wage laws, overtime pay, health and safety, workmen's compensation, old age insurance, social security, labor relations, income tax withholding and many others too numerous to catalog.

Both federal and state statutes must be obeyed and these are supplemented by innumerable administrative rules, regulations and interpretations requiring not only a vast amount of time and care in record keeping but also a considerable degree of expertness in legal phraseology to understand at all.

Naturally enough, the officials responsible for administration and enforcement of all these many and complicated statutes have sought to ease their burdens and improve the efficiency of their work by any practi-

LEGAL STATUS of pulpwood producers, as these in Maine, is serious industry problem.

cable means at hand. For this, perhaps, we should not blame them too severely.

Each employer, of course, is solely responsible for full compliance with all of these laws as they affect each and every one of his employes and from this it naturally follows that the greater the number of employes under a single control, the easier is the task of detecting and correcting violations. But the fact remains that the status of employer must be established before liability for violation may be imposed.

EMPLOYER-EMPLOYE RELATIONSHIPS—For the purpose of this discussion, let us take the Fair Labor Standards Act as an extreme example of what may or may not happen in this respect. It is valuable as an example not only because we have all had extensive experience with it but also because its administration throughout its existence reveals an accurate picture of official thought and action.

Ordinarily the relation of employer and employe is created and measured by the well-established rules of common law which are relatively simple and easy to understand. In essence, they are to the effect that the master may hire the servant to work for him under stipulated conditions and for an agreed compensation.

The master usually supplies all tools and materials and always has the unqualified right not only to designate the work to be done but also to direct how, when and where it shall be done. The basic element of the relationship is the absolute, full and unquestioned right of control of the servant by the master. Absent this, the relationship does not exist.

WHAT IS AN EMPLOYE—One would ordinarily suppose that these rules would be applied in interpreting any statute dealing with the subject of employer and employe, but this is not so in the case of the Fair Labor Standards Act.

That statute, with certain exceptions which are not important to us, defines the word "employer" as including "any person acting directly or indirectly in the interest of an employer" and the word "employe" as including "any individual employed by an employer," from which it will be seen at once that the statutory definition is much broader than the common law rule and at the same time is sufficiently vague and indefinite to permit almost any interpretation which would promote centralization and resulting convenience in enforcement.

Recognizing this, the successive administrators of the Act, for the obvious reason just stated, have taken the position that a pulp mill procuring its wood through those of us whom we know as producers or contractors is, as a matter of law, the employer of such contractor and of the men hired by and working for him.

It makes no difference what nominal form the relationship between the mill and the producers may take. The fact is that the producer is cutting and hauling the wood which is consumed by the mill and is therefore, in the view of the administrator, acting "in the interest" of the mill and his employees are the employes of the mill which thereby becomes ultimately responsible for compliance.

The argument to support this convenient thesis is, in substance, that the alleged relation of master and servant is created not by the old rules of common law but, because of the humanitarian and beneficient purposes of the Act as declared by Congress, comes into existence by operation of a number of indefinite and indefinable factors which, added together, produce a situation of so-called "economic reality" which is controlling.

In this way the administrator, by taking into account the factors which appear to support his position and ignoring those which might weaken it, can always determine that full liability under the law may be laid upon the mill, and the administration of the Act becomes correspondingly simplified insofar as this industry is concerned.

I may add that this doctrine of "economic reality" has been formally recognized and affirmed by the Supreme Court of the United States and so may always be resorted to in the absence of an unmistakably plain statutory direction to the contrary.

APA'S SUCCESSFUL FIGHT—One of the bright chapters in the history of the American Pulpwood Assn. is the record of the hard and successful fight to forestall the application of this theory of "economic reality" to the administration of the Social Security laws.

This campaign was fought out in Congress and resulted in a change in the law effected by an amendment which explicitly declared that responsibility for coverage should be determined by the ordinary law rules of master and servant rather than by any concept of what might from time to time be considered to be the "economic reality" of any situation, thereby in effect overruling the Supreme Court itself. It is my view that the Fair Labor Standards Act is ripe for a similar amendment.

EMPLOYEE VS. INDEPENDENT CONTRACTOR — Nevertheless the same work performed by the servant for the master may be performed by someone who is in no sense his employe. This is the independent contractor who agrees to produce, by his own methods and work, the same result which the hired servant would have produced under the supervision and control of the master.

The contractor undertakes to supply a finished job for a price—no more and no less. He hires his own men, usually supplies his own tools and materials and is responsible only for the result. The person who contracts for his services may, of course, provide in the contract what work is to be done, where it is to be done, and the time within which it is to be completed. But the methods, means, wages and working hours and conditions are the sole concern of the con-

tractor over which the other party has no right of direction or control whatsoever.

It must be understood, of course, that the distinction between an employe and an independent contractor which I have attempted very briefly to outline is one which is basic and elementary. Different circumstances will vary or alter the relationship in an almost infinite number of ways and it is true that there is a border area which sometimes makes it very difficult to determine whether one who performs work or services is in one category or the other but these we cannot consider at the moment.

RELATIONSHIP BASED ON FACTS—It must also be remembered that any legal relationship is always established by facts alone as distinguished from mere statements or nomenclature and that a pretended contract or other arrangement will not control a situation in which the facts are other than as stated in the writing.

Calling a man a "contractor" in an elaborate contract, complete and detailed upon its face, will not make him one if in fact he is nothing more than a servant or employe, and the existence of the fact may always be proved by competent evidence of what he does and how he does it notwithstanding many pages of pious declarations to the contrary incorporated in a formal agreement.

And such proof may be, and frequently is, made by showing circumstances and relations of the parties from which an inference may be drawn successfully to contradict the written words. Needless to say, contracts of this kind are always examined most critically by the courts and administrative agencies when there is involved any question of whether or not the individuals concerned are covered by the Fair Labor Standards Act or similar legislation.

TYPES OF PULPWOOD PRODUCERS—Bearing in mind what I have said, let us look for a moment at several typical situations of pulpwood producers and see if we can make a reasonable determination of their status.

Let us first take the case of a large corporate maker and consumer of woodpulp which uses its own employes on its own payroll in taking pulpwood for its own use from its own land or from stumpage leased from others.

This illustrates the simplest possible arrangement from the administrative point of view, for the records are usually all available in one place, the operation is sufficiently centralized to make inspection easy and the employes are available for direct interview and questioning. There is no doubt as to the identity of the employer, responsibility is pinpointed and enforcement becomes routine.

LOADING IN MICHIGAN. What is the relationship of this contractor to industry—to his employees?

But if this same company should abandon the methods just described and turn to other ways of procuring its supply of wood a new situation and a new problem would have to be considered. The woodlands and leases would still remain but it would be necessary to find a way to cut, haul and deliver the pulpwood. How could this be done?

CONTRACTOR BECOMES EMPLOYER—First, the company might sell the standing trees and cutting rights to a second party and contract with him to buy back the same trees after he had converted them into pulpwood. The second party in such case would, nominally at least, become the actual producer and seller of the wood and, under his contract, would be obligated to supply the necessary equipment, assemble his crew and complete the cutting and hauling within the stipulated time.

He would repair and maintain his own gear, pay his men their wages and conduct the entire operation, within the limits of his contract, as he alone might see fit. The difference between the contract price and the cost to him of the job would represent the profit or loss resulting from his independent enterprise.

The result to the mill would be the receipt of the needed wood in exchange for the flat contract price without regard to loss or gain. Such a transaction, without more, would appear to relieve the pulp mill of any status as employer of the contractor's men or of any legal responsibility for them, always assuming that the administrator could not marshall enough factors to establish a contradictory "economic reality."

The same result would follow logically if instead of selling the trees and cutting rights, the company should make a contract with the second party to do the cutting and hauling job alone. This would be nothing more or less than a service contract such as window-washing and maintenance contractors make with the owners or tenants of large buildings.

Here the contractor would do exactly the same work, supply the same equipment and hire and pay the same men as in the previous case, the only difference being that he would have no property rights in the trees cut. As an illustration, I may cite an instance of this within my personal knowledge.

ILLUSTRATION CITED—The company involved is a pulp mill and makes a written agreement with a contractor who represents that he is engaged in the business of cutting and hauling pulpwood. The company undertakes to designate the portions of its own or leased lands upon which the contractor is to operate, authorizes entry thereon, specifies the type of wood to be cut and the date when cutting is to commence, names the points to which the wood is to be hauled, fixes the number of cords to be delivered each week and the rate per cord to be paid for such service and delivery.

The contractor on his part agrees to cut the specified wood according to required cutting practices provided in the contract, be responsible for deterioration of wood due to his fault, load the cut wood on cars or deliver by truck as required, observe good fores-

Bucking in Virginia

There are literally thousands of such pulpwood workers in the South. What is their relationship to the pulp and paper industry they serve?

try practices in cutting, deposit security for performance, furnish all labor, tools and equipment, comply with all laws affecting the operation and indemnify the company against claims arising from the fault of the contractor.

Subject to inspection for compliance with the contract, the contractor reserves the sole right to determine the time, method and manner of performance.

Such a contract, if performed strictly in accordance with its terms, would seem amply sufficient to relieve the pulp mill of the status of employer of the contractor and his men. On the other hand, if it should be shown that the entire operation was actually financed by the mill, that the men employed by the contractor were the same as previously employed by the mill, that the contractor did not do nor offer to do similar work for others than the mill and that, under the guise of inspection, the mill in reality directed and controlled all of the details of the work and the method of performance, a court might well hold that the contract was a sham device for concealment of the true relationship in order to permit the mill to avoid its responsibility under the law and would refuse to give it any effect at all.

MILL NOT OWNING TIMBER—Next, let us take the case of the pulp mill which owns no timber lands or rights and must buy its supply of wood from others. Its normal source of supply would be the dealers, the large and small producers and the farmers in the vicinity.

All of these, presumably, would be wholly independent of the mill and any transaction with them would represent nothing more than an ordinary purchase and sale which the mill, like you and I, would be fully at liberty to make with whomsoever it pleased. Aside from the question of so-called "hot goods," I can see no cause for concern of the mill in any such dealing where there is no connection between the parties other than I have indicated.

But the dealer in such a case is in a little different position. He must procure the wood which he sells to the mill. Therefore, in his relation with the mill, he occupies, in effect, the status of a producer, since he is the man who actually supplies the wood which is used by the mill. This being so, he is open to all of the dangers to which the self-supplying mill would be exposed and which I have just described.

DEALER HAS EMPLOYER STATUS—The dealer may produce his own wood from his own lands or stumpage. If he hires his own men for this, there is no doubt of his status as a responsible employer. If he contracts to have the work done by someone else, his need is to assure himself that his contractor is truly independent by every possible test.

If he purchases the wood from other individual producers, he should be equally careful in his dealing, for the closer he comes to financing or directing the operations of either his contractor or producer the more risk he runs of having them and their help being held to be his own employes and he the responsible employer.

As in the case of the mill, the question will always be determined on the facts as they actually are and not what they may appear to be on the surface.

SMALL PRODUCER'S POSITION—The relatively small producer occupies the most difficult position of all. He may be wholly independent, wholly dependent or a mixture of both. If he is small enough he may have certain exemptions but he is always subject to enough regulation to make his status a matter of importance to him.

If he is wholly independent he is frequently the subject of inspection and investigation by those in authority who suspect him of violation or exploitation for his own profit.

If he is wholly dependent, he has no business of his own and is subject to absolute dictation and control by those upon whom he must depend. If he is a mixture of both, neither he nor anyone else really knows just where he does stand and he is constantly plagued with the uncertainty of his legal obligations.

The independent, if he wishes and is able to, can remain independent as long as his business is truly his own and free from interference and control by others.

And in this status he has precisely the same rights and the same privileges under the laws as has the largest business in the land, regardless of the opinions or wishes of those who, for purposes of administrative convenience, would classify him as the employe of someone else.

In this status he may, among many other things, buy and sell property, borrow money, acquire equipment, hire and fire employes, sell his product when, where and to whom he pleases, make any kind of lawful contract, direct and control every part and parcel of his business enterprise and bear his losses or enjoy his profits as the case may be.

If he is in fact, what he purports to be, no court or administrator can decree that he is the employe of another merely because he borrows money or accepts an advance payment from his dealer or by any other formula or the so-called "criteria" of "economic reality."

INDEPENDENCE MUST BE GUARDED—Real business independence, like any other, must be alertly and vigilantly guarded. The business must be real, existing and bonafide enterprise rather than just a shell represented by a name. Financing should be done in accordance with the accepted and usual rules of banking and business.

Care should be taken to assure that, insofar as possible, activities remain continuous and diversified and that sufficient bank accounts and business records are constantly kept and maintained to support the claim of independent status.

Above and beyond all, it should always be possible to demonstrate beyond question that all of the operations are under the direct and undisputed control of the individual proprietor who makes the contract in his own name and, except as to specifications of the product, undertakes to perform it on his own responsibility and in his own way.

Circumstances, of course, alter cases and it will frequently not be feasible for a producer to adhere rigidly to the general principles which I have just

stated. Economic and territorial considerations may limit the area of operation and the number of potential patrons.

In fact, it may well be that in a given locality there is only one mill with which a producer can economically contract. It is equally possible that the producer in need of financial assistance to carry on must of necessity obtain that assistance from that mill.

Or there may be innumerable other contingencies, none of which, taken alone, is necessarily fatal to the status of independent producer or contractor. But they are at least some evidence of dependence or control and if they are sufficiently numerous and substantial they may, taken in sum, supply enough factual proof to destroy that status.

This danger is, or should be, a matter of as much concern to the mill as to the producer since it will shift the ultimate legal burden from the one to the other.

THE FARMER'S CASE—It remains only to consider the case of the farmer who seems to be in a special class by himself. He is generally considered to be one of the most independent people on earth and he usually is. His importance to this industry needs no elaboration, for he supplies a large percentage of the pulpwood consumed.

But while he enjoys certain legal exceptions merely by virtue of his occupation, he is by no means immune to legal restriction in producing his wood. His exemption under the Fair Labor Standards Act, for instance, is strictly limited to the production of wood as a part of his farming operations on the farm.

He is legally privileged to use his spare time to cut and sell a few cords of wood taken from his woodlot on the farm but there he must stop.

If he branches out and recruits a crew of cutters and haulers to take wood from lands other than his own farm he finds himself in the same spot as any other producer and assumes the status of a legally responsible employer. And unless he and his customers observe the rules I have been talking about, the customer may discover, to his amazement, that he is the legal employer instead of the farmer.

CONCLUSION—All of this sounds like a legal merry-go-round and to some extent it is. Yet the problem is not as confusing as it may at first appear. Its solution depends upon a close and accurate analysis of the facts involved in each case and a reasonable and intelligent application of the applicable law.

This, obviously, is a matter for careful consideration by each individual of his own peculiar situation, aided by competent professional advice. Seldom, if ever, are any two cases exactly alike and what may be the determining factor in one may be of minor or no importance in another which has a different factual background.

Therefore, it should be a matter of supreme concern to have available all of the facts before attempting to reach a conclusion, for it is upon the facts alone that the ultimate issue of status will depend.

I think that it is reasonable to expect that the administrators of these regulatory laws will continue to press for as wide a coverage as possible and that, in enforcement, they will always seek to establish concentration of employment wherever they can do so.

I think also that the courts will be generally sympathetic with that approach because these statutes have been held uniformly to be humanitarian in purpose and for that reason the judicial attitude has inclined toward wide extension and strict enforcement.

Therefore, it can be anticipated that whenever the question of status is raised the case will be meticulously examined for evidence of sham or evasion.

But granting all of that, the fact remains that a legal status is, or is at least, supposed to be, established by law applied to facts, regardless of personal beliefs or philosophies, and if a producer, large or small, corporate or individual, can establish his position by competent and preponderant proof, he will always know substantially where he stands and what his responsibilities are.

While it is true that evasion and subterfuge, where found, will be exposed and condemned, it is equally true that a bonafide status, sufficiently shown, will be recognized and protected. With that, at least for the time being, I think we must be content.

Pulpwood Logging Trends

Review of industry trends and logging methods, mechanization, costs, public relations

By W. E. McCRAW
Caterpillar Tractor Co.

● Speaking on the theme of logging trends is a very pleasant assignment. First, there has been great progress in pulpwood logging methods in the last 25 years. Second, I am looking forward to the annual meeting of the American Pulpwood Assn. in 2005. Then we'll be taking another look at logging techniques, and I am sure some will say—"Man, you sure didn't know what you were talking about back in 1955."

INDUSTRY TRENDS AND LOGGING METHODS—However, there are some very significant developments in the pulp and paper industry that are making and will make great changes in pulpwood logging methods in the future.

In the Industry's Growth: Continuation of the very rapid growth of industry of the past into the future.

In the Industry's Forest Management Policies: (1.) Increased use of inferior species—aspen in Lake States, oak in Appalachians, gum in the South and the use of sawmill residuals—as a source of pulping material.

(2.) Increased production of pulpwood from company lands in the South, coupled with increased depletion of easily accessible stands in the North.

(3.) Increased forestry work on company lands—access road building, forest protection, mechanical planting and replanting and timber stand improvement work.

In the Industry's Public Relations Policies: (1.) Increased attention to the value of good public relations.

(2.) Increased attention being paid to furthering better producer-company relations.

PROGRESS IN MECHANIZATION is shown by tractor and sulky for skidding, and cranes and slings for loading pulpwood

(3.) Increased provision for multiple use of forest lands in addition to growing timber—such as public hunting, fishing and recreation.

FOUR MAJOR FACTS—Discussing these trends in more detail, we at once recognize these major facts within the industry.

(1.) The pulp and paper industry has grown from a consumption of 7.6 million cords in 1935 to 28.5 million in 1954, and will grow to an estimated 38.1 million by 1975—an increase of 500% in 40 years.

(2.) From 1940 to 1954, the price of pulpwood has gone up 500%, whereas pulp and paper product prices have risen only 206% and general commodities only 215% in the same period.

(3.) The increase in the civilian labor force from 1952 to 1975 is estimated at only 35%, whereas the increase in production of pulp and paper is estimated at 66% for the same period, thereby requiring an increase in production per man hour.

(4.) We are currently faced with the possibility of an increase of 17% in the federal minimum wage scale, which would add to the cost of hand logged pulpwood.

The industries forest management policies outline activities that are becoming standard practice with most companies. The industry is protecting its investment in plant and markets with sound policies.

INCREASED PUBLIC CONFIDENCE—The public relations programs of most pulp and paper companies are excellent. They are bearing fruit in the increased confidence of the public in the industry:

(1.) That it is not depleting our forest lands, but actually maintaining and restoring them to a greater production of forest wealth.

(2.) They are improving pulpwood logging in the eyes of the public, by adding to the stature of the producer and jobber as a solid citizen. They are dispelling the idea that a pulpwood logger is one of the lower forms of humanity.

(3.) They are stressing the fact that there is good money to be made in growing, logging and selling pulpwood.

(4.) That the industry is a vital and dynamic force in the well being of many communities.

THERE ARE PROBLEMS TOO—It is difficult to separate the trends from the problems. Most of them are interrelated and are in the nature of long range solutions.

The most pressing problems of the industry are obvious—an increasing demand for pulpwood—the cost of pulpwood has spiralled out of proportion accompanied by a smaller labor supply to draw from in the future.

The solutions to these problems are not easy, but the need for answers is painfully obvious, namely to increase the productivity of labor and to stabilize the cost of pulpwood.

However, we are not unaware of the need, and progress has been made by some companies. Enough has been made in the past few years that the problem of increased productivity is now more clearly defined in our thinking, and much greater advances will be made in the future.

PROGRESS IN MECHANIZATION—Progress has been made in all phases of pulpwood logging by the use of mechanical equipment. When these are listed, I am sure all of us will be surprised at their number. Listing only the methods that have been thoroughly proven, they are:

(1.) **Falling and Bucking Phase:** a, Chain saws, b, Bicycle saws, c, Reciprocating saws.

(2.) **Road . Building:** Bulldozers, scrapers and motor graders.

(3.) **Skidding Phase:** a, Ground skidding with track-type and rubber-tired tractors, b, Sulky and arch skidding with track-type tractors, c, High load cable skidding.

(4.) **Loading Phase:** a, Cranes with slings or grapples, b, Truck mounted cranes, c, Tractor mounted cranes, d, Tractor mounted front end loaders, e, Pallet loading.

(5.) **Short Hauls**—Forwarding Pulpwood Phase: a, Tractors and drays, b, Sloops, c, Wagons, d, Pallets.

(6.) **Long Hauls Phase:** a, Tractors and sleighs on winter hauls, b,Trucks —single axle, c, Truck and trailer combinations.

(7.) **Miscellaneous Equipment Phase:** a, Portable chippers, b, Portable barkers, c, Tree girdlers.

LOGGING COSTS—One question that immediately comes to mind is why has the cost of pulpwood logging continued to rise with all these different methods and equipment. It is a good question, and I think the following answers are true.

(1.) The tendency of companies to give small quotas of pulpwood per week or month or other period to a producer or jobber which does not permit him to make the necessary investment in equipment required to use the above methods to any extent.

(2.) For the past 15 years, emphasis has been on production at any cost.

(3.) There has not been enough crew training in the best use of logging equipment, and in educating loggers in the philosophy of the use of machinery to lighten human labor.

(4.) There has not been enough ideas, detailed thinking and planning on the use of presently available machinery and methods.

(5.) In some regions, methods have not been adapted to take full advantage of biotic resources. Pulpwood has been cut on a single tree selection system basis rather than clear cutting and mechanically replanting. In most cases, this system has reduced the pulpwood yield per acre to a point where efficient logging methods are not practical, and in many cases has

not had the desired silvicultural results.

(6.) We have been too easily discouraged by first results—costs not production have been the yardstick in measuring the practicability of a method—therefore not carrying experimental logging trials to their conclusion. Often an experimental logging job is put on a production basis too soon, and it does not get a chance to shake itself down to routine before its production is checked against more conventional methods.

(7.) Some companies have taken the approach of letting someone else spend time and money experimenting, and they'll reap the experience and the benefits without the expense. This reasoning is similar to trying to learn to swim by reading how to in a book. We all know you have to jump in and get your own feet wet in order to learn.

FUTURE LOGGING METHODS—That summarizes, in my opinion, what we have been doing up to the present on the problem of pulpwood logging. Many will not be in agreement with me, but I feel you will admit that some member companies have developed sound and practical mechanized techniques with savings in manpower and costs by the use of the above methods while others unfortunately have tried them and not succeeded.

Our approach to logging has been rather shallow. We have thought of it as only a simple material handling problem. I admit it is—but as we struggle to develop the art of economic logging, we realize that logging is much more than material handling alone, and that it is a queer mixture of geology, climatology, psychology and a few other "ologies."

WHAT OF THE FUTURE—So now, what of the future—what will be the logging methods in use in the next few years. I think our experiences in the past will largely determine our approach in the future. I believe that most progress will be made by refinements and improvements in existing methods and machines rather than by totally new methods, although I know there will be some new methods developed. One of the most interesting aspects of logging is the continual search for new and better ways of doing the job. Logging in America is vigorous, dynamic, changing—as it should be.

So pulpwood logging methods are changing and will continue to change. I have listed some present methods and machines, which, in my opinion, will develop much greater importance in the future.

(A) **Present Methods With Future Potential.** Tree length skidding to landing—bucking and loading by means of power equipment. Pallet logging in which the pulpwood bolts are loaded in pallets at the stump by tractor mounted boom and grapple. Yarding stump piled pulpwood with Anderson Wood Hawk. Custom skidding and road building services to small producers to save labor and truck costs. Handling pulpwood in chip form—barking and chipping in the woods.

(B) **Machinery Improvements and Developments of the Future.** Improvements to tractors to give longer track wear, higher clearance, longer lubrication periods, and more attachments for greater versatility. Conversion units will be offered to change track-type tractors to 4-wheel drive rubber-tired tractors and vice versa. General design changes to give more cheaper operating costs.

Design and manufacture of 4 by 4 tractors of larger sizes such as the DW15 (with integrally mounted arches) for yarding tree lengths in larger trees.

Improvements to tractor mounted pulpwood loading forks to load all lengths of pulpwood. Improvements to truck mounted pulpwood loading and unloading devices. Development of lighter tractor winches.

Improvements to pulp logging equipment—chain saws and other items. Development of efficient, highly mobile barking and chipping units to produce clean chips in the woods. Development of a pulpwood machine to cut, bark, package and load pulpwood in one operation on a clean cutting method such as in plantations.

These improvements in methods and machines are based on two concepts of our future logging areas—wild, naturally grown stands and plantations in forest regions that permit intensive forest management practices due to shorter rotations.

However, we will always have to log wild areas, and that is why I believe we shall continue to use improved techniques of our present methods, but I can foresee great increases in man-day and machine production as we start logging in plantations.

I think logging plantations will have a tremendous impact on pulpwood logging methods—if full advantage is taken of the logging potential presented by plantations—even aged stands—equal spacing, heavy cordages per acre—better terrain and topography.

Full advantage could be interpreted as meaning a completely mechanized logging operation—clear cutting and replanting to insure an equally good logging chance in the next rotation. I think the reduction in logging costs will be spectacular.

CONCLUSION—In conclusion, may I summarize my remarks by regions:

(1.) **In the Northeast and Lake States**—A gradual and continual improvement in logging by refinement of present methods and machinery.

(2.) **In the West**—Prelogging and salvage logging with smaller tractors and equipment than are used at the present time.

(3.) **In the South**—Much greater progress is forecasted. The industry is younger there and has not as yet stabilized its methods as much as in other regions, and it is faced with greater problems of increasing production, increasing wage scales and changing logging conditions.

We are all mutually concerned and involved in pulpwood logging. You are vitally interested in buying logging equipment to do the job most efficiently, and we, as manufacturers, are equally interested in the design, manufacture and sale of the machinery you want.

Yours is a good and expanding market to manufacturers; so much so that we are paying particular attention to working with you to make equipment especially designed for your industry. We hope you will be patient with us. Why? Because it takes a long time for us to determine what your industry wants. Secondly, after we do determine this, it takes a long time to design, test and manufacture the unit for you.

We are looking forward to maintaining our pleasant and cordial relationships of the past year and hope that they will become deeper in the future as our pulpwood logging methods became more mechanized and intensive.

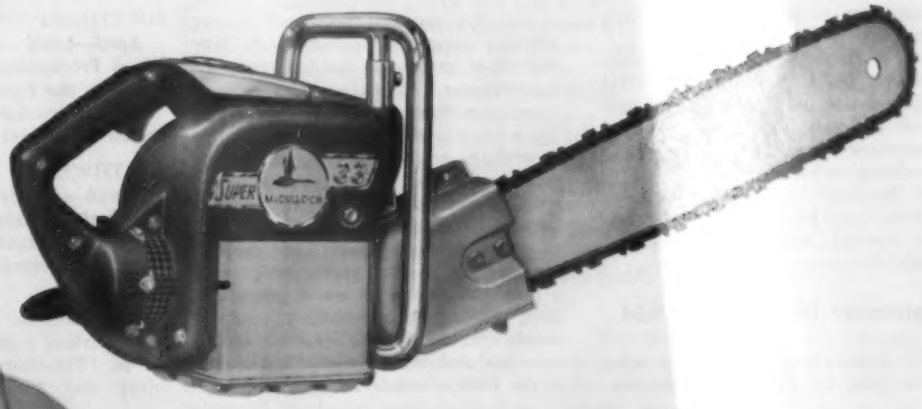
Let us remember the Biblical phrase —"It is more blessed to give than to receive." This is true in pulpwood logging as in everything else—sharing failures and successes—a freer exchange of information.

In this way we can quickly reach our common goal of more efficient pulpwood logging.

Denna nya Super 33 har oerhörda HORSEPOWER!
Je n'ai jamais vu de CUTTING SPEED pareille!
這新起哥 33 賺更多的 MONEY
Tämä Yliveto 33 miellyttää minua sillä se on niin LIGHT!

Everyone's talking about

McCULLOCH'S NEW SUPER 33



Everyone's talking – and what are they saying? They're saying the new SUPER 33 has *super* performance and *super* cutting speed for such a light, light saw. The Super 33 weighs only 22 pounds! (18 pounds without blade and chain.) This is news that will make money for loggers of pulp and sawmill timber.

Visit your nearby McCulloch dealer and try out this sensational saw. It has increased horsepower, extra durability, a new wrap-around handle, more accessibility, better cooling, a modified carburetor, and a new sawdust and sprocket guard. It's your best dollar value in a light-weight saw.

McCULLOCH

World's largest chain saw builder

McCulloch Motors Corp., Los Angeles 45, Calif.

S-6707-B

REVIEW OF ASSOCIATION ACTIVITIES

● Since its organization 21 years ago, the American Pulpwood Association has remained the only national organization representing both producers and consumers of pulpwood. Its program is set up and carried out to keep this industry posted on national legislation affecting its operations, production and procurement methods and equipment, labor training aids and programs, improved utilization methods, conservation and good forest management practices.

To accomplish these objectives, the New York staff of six, including the Executive Secretary and Safety and Training Officer, is supplemented by a retained staff of legal advisors, a permanent Washington representative, and three regional Logging Engineers.

The Board of Directors, made up of 30 individuals directly concerned with pulpwood production and procurement for their respective companies, has set up seven standing committees to serve in an advisory capacity.

As a result of these coordinated activities, APA publications in 1954 included not only its regular Legislative Bulletins, reports of Technical Committee meetings, Equipment Handbook releases, Training Guides and Notebooks, Forest Notes, News Letters, and Pulpwood Annual, but also special reports on pulpwood availability, source, and supplies.

Legislative Highlights—1954

By comparison, 1954 was a relatively quiet legislative year, the major activity of the Association being preparation for opposition to anticipated proposals to the 84th Congress covering elimination of the 12-man and seasonal exemptions and the increase in the minimum wage provided in the Fair Labor Standards Act.

Other subjects covered by Legislative Bulletins included: Fair Labor Standards Act Proposed Amendments; FLSA Record-Keeping Regulations; Wage-Hour Investigations; Wage-Hour Record Inspection; Computation of Overtime Pay; Importation of Canadian Labor for Woods Work; Proposed Extension of Federal Unemployment Insurance; State Ton-Mile Taxes; State Timber Severance Taxes; Effect of Rising Compensation Insurance Cost; Federal Land Acquisition Proposals; Capital Gains Tax as It Affects Timber.

Technical Committees

The five regional Technical Committees, composed of individuals involved in pulpwood production and procurement for their respective companies, meet at least twice a year for a clinical discussion of operating procedures and equipment. Meetings may be devoted to consideration of a specific method, machine, or operation, or to a topic of general interest to the region concerned. Most meetings include as part of the program, a technical review of wood preparation; hauling and handling equipment; training, safety, and supervision; and industrial forestry. A glance at the 1954 schedule will give a good insight into the range of subjects covered by these Technical Committees.

NORTHEAST
- *January*—Debarking
- *June*—Safety and Training
- *October*—Hot Logging Operations

LAKE STATES
- *January*—Minnesota and Ontario paper Co. Woods Operations and Forest Management Projects
- *May*—Wood Preparation, Hauling and Handling Equipment—Industrial Forestry
- *September*—Construction and Maintenance of Forest Truck Roads on Federal and State Lands
- *December*—Road Construction on Industrial Forest Lands

APPALACHIAN
- *April*—Industrial Forestry
- *October*—Industrial Forestry

SOUTHEAST
- *April*—Land Management and Wood Procurement Programs in Relation to the Public.
- *November*—Sawmill Waste Utilization Equipment

SOUTHWEST
- *March*—Accident and Compensation Costs as Related to the Cost of Pulpwood Production
- *October*—Hardwood Control

The Northeast Technical Committee undertook a new and useful project in 1954—that of producing two safety and training films entitled

MEMBERS OF APA BOARD OF DIRECTORS, 1955-56, photographed at February 1955 meeting in New York City (left to right): **Front row,** F. C. Lowthorp, E. C. Melcher, G. B. Amidon, W. J. Damtoft, L. J. Freedman, E. O. Ehrhart, E. B. Hurst. **Second row,** L. A. Whittle, R. R. Drummond, R. W. Lyons, L. J. Kugelman, D. B. Demeritt, C. S. Herr, G. W. E. Nicholson, W. S. Bromley. **Back row,** Wm. Hilton, W. M. MacConnachie Jr., Karl A. Swenning, A. G. Curtis, Earl Porter, T. W. Earle, H. R. Palmquist, F. E. Pearson.

"Winter Hauling in the Northeast" and "It's Not the Axe, It's Joe." Production of these 16 mm sound color films in both English and French was sponsored by 14 Northeastern members. As a result of the time and effort given by this group, these films were produced at about ⅛ the cost of a professionally made film. Prints are now available for sale or on a loan basis through the APA's New York office.

Equipment Handbook

To keep the membership further advised on the development, availability, and application of new equipment, the three Logging Engineers prepare releases for the APA Equipment Handbook. Supplemented in most cases by photographs, drawings, and observations of the equipment in actual operation, these releases serve to keep members posted on machines and methods designed to increase production, and at the same time, decrease unit cost.

Topics covered by Equipment Handbook releases include:

- Power Saws
- Sulkies and Arches
- Loading & Hauling
- Rigging
- Peelers and Barkers
- Slasher Mills
- Tractors
- Trucks
- Trailers
- Misc.
- Road Construction and Maintenance
- Water Transportation
- Camp and Repair
- Tree Planting
- Hand Tools
- Railroad Transportation
- Mill and Yard
- Fire Protection
- Forestry—General
- Logging—General

Releases were issued during 1954 on the subjects listed at right.

EQUIPMENT HANDBOOK RELEASES ISSUED DURING 1954

Release Number	Subject:
183	Portable Light for Fire-Fighting Tractors
184	Effects of Storage on Southern Pine Pulpwood
185	Depreciation, Deterioration, and Obsolescence as It Affects a Mechanized Pulpwood Operation
186	Barker Rim-Circle Saw
187	McCulloch One-Man Chain Saw for Small Timber
188	Protective Tractor Canopy
189	Model FA Terrill Chain Saws
190	A Pulpwood Tractor Hoist
191	The Pulpwood Scalometer
192	The Hurricane Sawlog Debarker
193	Handling Pulpwood with a Gerlinger Lift Truck
194	Gasoline Wright Saw
195	Load Weight Marker for Trucks and Trailers
196	Little Beaver Tree Girdler
197	Homelite Model 17 Chain Saw
199	Cable Splicing Vise
199	Results of the Pulpwood Scaling Questionnaire and a Discussion of Scaling Accuracy
200	Loading Barges with Cary-Lift
201	"IMPCO" Equiflow Wood Chipper
202	Safe Handling of Sodium Arsenite
203	The Nicholson Roto-Barker—A Log Debarker
204	Custom Made Scale Rules
205	Book Review—*Wire Skidding: Wood Transportation by Gravity over a Suspended Wire*
206	Combination Snake Bite and First Aid Kit
207	Vises or Holders for Crosscut and Bow Saws
208	Tests to Determine the Effects on Gypsy Moth Eggs by Submergence under Water
209	Pulpwood Measurement Time Study
210	Book Review—*Full-Tree Logging*
211	The Lowther Wild Land Tree Planter
212	Southern Hydraulic Slab Debarking Operation
213	Weed Control for Yards or Fire Lanes
214	The Harris Land Cleaner
215	50-Inch Pulpwood in Gondola Cars
216	Bluflame Engine Block Heater
217	Progress-Report—Anderson Woodhawk

Safety and Training

1954 saw the completion of the revised Training Manual and the issuance of three Training Guides and accompanying Workers' Notebooks. These publications, based on the original Training Manual written by the Safety and Training Officer, are the first of a series planned to provide background and reference material for training in various phases of pulpwood production. Released in 1954 were:

TRAINING MANUAL, covering the basic principles and application of training, safety, and preventive maintenance.

TRAINING GUIDE NO. 1—FOREMAN TRAINING, outlining a program of training foremen as well as pulpwood producers and contractors in responsibilities, training workers, and job planning.

FOREMAN'S NOTEBOOK, a pocket-size notebook highlighting the important points of Guide No. 1, designed to be distributed to each trainee for periodic reference.

TRAINING GUIDE NO. 2—USE AND CARE OF AXES, outlining a program for training workers in safe and efficient methods of axe use and care.

TRAINING GUIDE NO. 3—USE AND CARE OF PULPWOOD HAND SAWS, outlining a program for training workers in safe and efficient methods of hand saw use and care.

PULPWOOD CUTTERS' NOTEBOOK, a pocket-size notebook highlighting the important points in Guides 2 and 3, designed to be distributed to each worker for his reference.

The Safety and Training Officer's activities took him to every section of the country. Safety and training sessions were conducted for indoor groups, field sessions, and on-the-job crews made up of dealers, contractors, company men, and woodlot farmers. Some time was also spent conducting similar sessions for forestry colleges, and exhibits and safety talks were prepared and presented at forestry field days in the East.

It is interesting to note that the Bureau of Labor Statistics shows a decrease in the annual average injury rate per million man hours in logging of all forest products. We feel sure that APA-sponsored sessions and materials are contributing their share toward an over-decreasing accident rate.

Conservation & Forestry

Another important part of the APA program involves the publication of Forest Notes, containing forestry items of interest. During 1954, these

Forest Notes highlighted:

Forest Service Appropriations

Rights of Way Over Company Lands

Forest Loans

Oak Wilt Research

New Chemical Tab for Thinning and Weeding

Woodlands Protection from Insects and Disease

Status of Timber Resource Review

Industry-Forest Service Conference

Economics of Forest Management

Regional Pulpwood Production

Expanded Use of Hardwoods

The major outgrowth of the APA's Industrial Forestry program was release of the article "Our Papermakers Look to the Woods," which appeared in THE PAPERMAKER, published by the Hercules Powder Company, with a distribution of some 4,000. This article was written by the Secretary and Herman Work, Consulting Forester, engaged primarily to prepare this article. Reprints were made available to the APA mailing list of close to 1,000.

Another service rendered our members was issuance of a digest of the 400-page report by the Stanford Research Institute for the Weyerhaeuser Timber Company entitled "America's Demand for Wood." APA's 14-page digest of the portions of that report dealing primarily with pulpwood was released as a Forest Note, and an 83-page summary by Weyerhaeuser was also made available.

Results of a survey covering plans for harvesting pulpwood from State lands were presented by the Secretary at a meeting of the Council of State Forestry Association executives late in the year. Reprints of this paper were released to the full APA mailing list, including State forest supervisors and other administrators of State and Federal lands.

Membership

Any organization or individual engaged in the forest products industries is eligible to one of the classes of membership provided by the APA. Membership is divided into Industry (voting), and Subscriber and Overseas (non-voting) Classes. Industry Class is made up of the companies and individuals engaged in pulpwood production and consumption in the United States. Subscriber Class is comprised primarily of manufacturers of equipment used in pulpwood logging, and individuals engaged in other forest products industries in the United States, as well as Canadian and Mexican pulpwood producers and consumers. The Overseas Class, as its name implies, includes those outside the U.S., Canada, and Mexico, interested in keeping posted on the U.S. Pulpwood Industry.

Memberships in all classes increased during 1954 to the point where over 300 separate memberships involved mailings to close to 800 individuals. It is interesting to note that the Overseas Class, adopted last year, now includes firms in New Zealand, Australia, Brazil, Sweden and Finland.

MORE WOOD MEANS MORE PROFIT

This Dixie Pallet Trailer carries a maximum highway load at the lowest cost. . . .

Lowest because: One man operates this equipment, picking up loaded pallets at a staging area, or scattered farm areas.

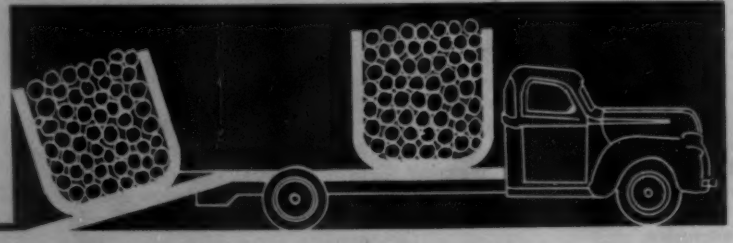
Lowest because: Trailer idle time is at a minimum. The driver picks up 5 loaded pallets in 30 minutes or less.

Let us suggest methods of handling Dixie Pallets for your terrain. Our experience shows that anywhere you can fell a tree, pallets can be loaded and moved out profitably.

Profits earned with this equipment are real because of its long life, low maintenance, and maximum safety in loading and transporting.

Tidewater Equipment

BRUNSWICK, GEORGIA



Log handling or skidding...the profit choice is OC-3

The rugged Oliver OC-3 is a crawler you can use to greater profit on hundreds of different logging operations. Small and compact, this tractor packs a big 22 drawbar h.p. and accommodates a variety of mounted equipment.

At the mill, the OC-3 is a handy unit for log loading or clean-up work. Its quick maneuverability lets you work in tight spots—places other tractors cannot fit. The logging tong shown above is completely hydraulic; it's one of the attachments that fit to the basic loader arms. The basic unit also converts to a powerful bulldozer in minutes.

In the woods, the OC-3's extra-high clearance and differential steering keep you working in wet, muddy ground—over stumps, ruts—places other tractors are useless. Long-life tracks and fully sealed and lubricated lower track wheels are some of the features that make the OC-3 long on service, low in operating cost.

See your Oliver Industrial Distributor. Try the OC-3 on your work, under your own conditions. Ask for a demonstration soon!

Small and compact, this OC-3 and rear-mounted winch make a perfect team for snaking logs out of dense wooded areas.

THE OLIVER CORPORATION
400 W. Madison Street, Chicago 6, Illinois

A complete line of industrial wheel and crawler tractors

ORGANIZATION AND PROGRAM FOR 1955-56

• The American Pulpwood Association will continue to strive for improvement in pulpwood preparation, loading, and production in general during the coming year. Its long-term objectives are:

(1) To conduct the Association in such a manner that it will guide and help the pulpwood industry to obtain pulpwood at the lowest cost, the highest quality and in adequate amounts now, and for future generations.

(2) To serve the entire pulpwood industry in our national programs of legislation, mechanization, training and safety and the intensive management of company forest lands.

(3) To encourage all members to prepare now for the predicted increase in consumption of pulpwood likely to occur during the next 10 to 20 years.

Board of Directors

The work of the Association is carried out by the Staff along the lines and policies laid down by the Directors of the Association. These men were elected by the Industry Members of the Association at their Annual Meeting on February 22, 1955, in New York City.

Northeastern Region

E. C. Melcher
S. D. Warren Co.
Cumberland Mills, Me.

F. E. Pearson, Jr.
Eastern Pulp Wood Co.
Calais, Me.

C. S. Herr
Brown Company
Berlin, N. H.

William Hilton
Great Northern Paper Co.
Bangor, Me.

Appalachian Region

E. O. Ehrhart
Armstrong Forest Co.
Johnsonburg, Pa.

Paul Koenig
Glatfelter Pulp Wood Co.
Spring Grove, Pa.

G. L. Snowden
The Mead Corporation
Chillicothe, Ohio

N. J. Bailey
West Virginia Pulp & Paper Co.
New York, N. Y.

Lake States Region

R. W. Lyons
Kimberly-Clark Corp.
Neenah, Wisc.

H. R. Palmquist
Marathon Corp.
Rothschild, Wisc.

G. B. Amidon
Minnesota & Ontario Paper Co.
International Falls, Minn.

E. B. Hurst
Consolidated Water Paper & Paper Co.
Wisconsin Rapids, Wisc.

South Atlantic Region

T. W. Earle
Gair Woodlands Corp.
Savannah, Ga.

L. A. Whittle
Brunswick Pulp & Paper Co.
Brunswick, Ga.

G. W. E. Nicholson
Union Bag & Paper Corp.
New York, N. Y.

S. K. Hudson
Container Corp. of America
Fernandina Beach, Fla.

Southwestern Region

Karl A. Swenning
H & W Div. of Scott Paper Co.
Boston, Mass.

Earl Porter
International Paper Co.
Mobile, Ala.

W. J. Damtoft
Champion Paper & Fibre Co.
Canton, N. C.

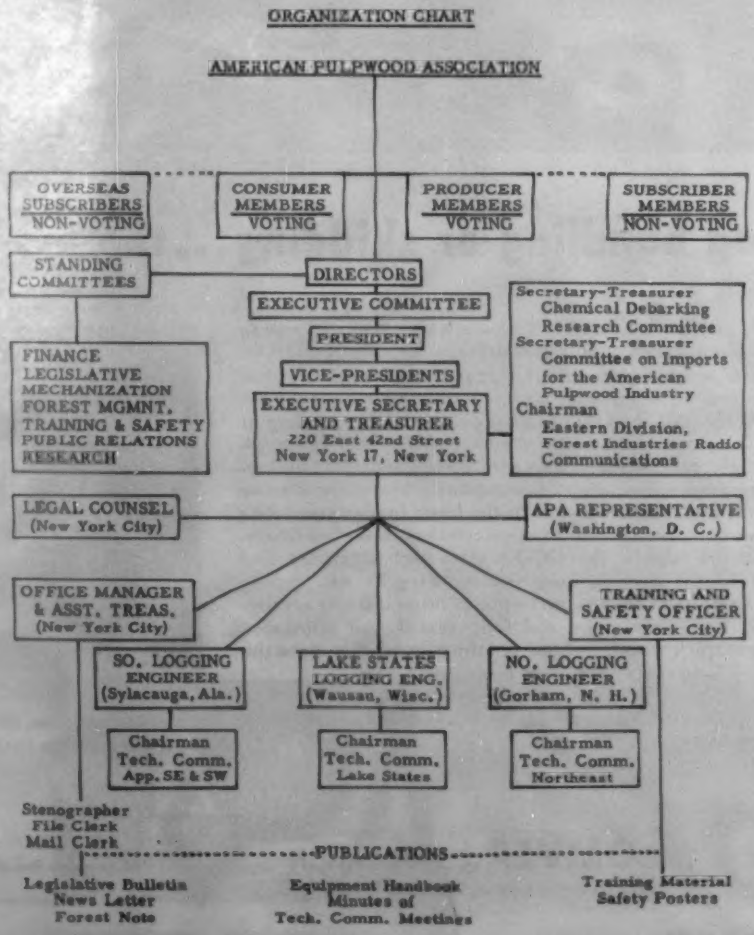
A. G. Curtis
Gaylord Container Corp.
Bogalusa, La.

At Large

L. J. Kugelman
International Paper Co.
New York, N. Y.

W. M. MacConnachie
Northwest Paper Co.
Cloquet, Minn.

D. B. Demeritt
Dead River Co.
Bangor, Me.



Little Beaver

TREE GIRDLER and ATTACHMENTS

The Greatest Reforestation Tool Since the Perfection of the Mechanical Seedling Planter

Little Beaver Tree Girdler cuts girdle around tree at walking speed. One man will girdle more acres per day than several men using other methods.

Brush and Pruning Saw attachments to take care of any brush cutting or pruning job; four foot sections may be added to get desired height. Brush saw does the work of several men.

A Post Hole Auger designed for one man operation, doing the work of heavy equipment diggers, holes quickly and easily made in any soil type. Wood auger may be attached for wood drilling.

Let The Little Beaver
Do Your Girdling Job.
Tried, Tested and
Proven in the Field

HAYNES TREE GIRDLER

For details, see your dealer, or write

Haynes Mfg. Co.
LIVINGSTON, TEXAS

DIAMOND *Announces*

a new model "145" chip mill

Intensive research and experienced designing by Diamond engineers have developed a chip mill with on-the-job performance records that are outstanding.

The size and quality of the chips are controlled to meet the most rigid mill specifications, with the very minimum of fines and practically no oversize.

It has a feed opening 22"wide and 18" high and will take all types of sawmill waste wood, even to full length pulp logs. Fast, economical, high capacity production of chips has been reported wherever the model 145 is in use.

Specifications

Portable or Stationary
Capacity — 10 to 15 cords per hour
Low Horsepower Requirements —
Diesel 200 to 300 hp @ 1800 rpm
Electric 150 to 300 hp @ 700 rpm
Power Feed synchronized with rotors
Rotors — Cast steel "V" type, dynamically balanced
Heavy duty roller bearings, 50% oversize
Shipping weight, 6500 lbs.
Rugged, all steel construction

DIAMOND IRON WORKS
DIVISION GOODMAN MANUFACTURING COMPANY
Halsted Street and 48th Place Chicago 9, Ill.

Strapped bundle of logs being stored on stringers in pulpwood "landing."

Strapping Pulpwood Cuts Handling Costs

All you need to cut a big slice off your wood pulp handling costs is one 24-foot piece of Signode Steel strapping, and one Signode anchor plate!

This simple equipment enables you to bundle your logs as they come from the farmers' trucks—a method that means fast, easy handling with minimum labor involved.

Such pulpwood users as the Masonite Corporation use steel strap bundling because of these advantages:

- speeds unloading of farmers' trucks
- induces farmers to make more trips
- ends piece-by-piece handling
- permits better storing in wood yard
- simplifies, speeds loading into cars, barges
- bundles are handled by usual mobile yard cranes
- reduces labor costs materially

Signode fieldmen will be glad to show you how to use these and other time, labor and money-saving methods in the handling and strapping of lumber of all kinds. Write

Draping Signode Steel strapping around bundle of logs as it leaves farmer's truck.

Loading strapped pulpwood on flatcar.

SIGNODE
STEEL STRAPPING COMPANY
2672 N. Western Ave., Chicago 47, Ill.

SIGNODE *this seal means security in shipping*

Offices Coast to Coast.
In Canada: Canadian Steel Strapping Co., Ltd.
Montreal, Toronto
Foreign Subsidiaries and Distributors World-Wide

WORKING TO FURTHER APA (left to right): W. H. BROMLEY, executive secretary-treasurer, W. H. DeROSIER, Northern logging engineer, H. H. JEFFERSON, safety and training officer, J. A. HOLEKAMP, Southern logging engineer, H. M. SHEPARD, Lake States logging engineer.

H. H. HOLDEN
Eastern Corp.
Bangor, Me.
R. R. DRUMMOND
Oxford Paper Co.
Rumford, Me.
H. V. HART
St. Regis Paper Co.
Deferiet, N. Y.
G. B. BONFIELD
American Boxboard Co.
Grand Rapids, Mich.
J. B. JOHNSON
Camp Manufacturing Co.
Franklin, Va.
G. W. BRUMLEY
St. Marys Kraft Corp.
St. Marys, Ga.
J. B. LATTAY
Riegel Paper Corp.
Bolton, N. C.
L. J. FREEDMAN, *ex officio*
Penobscot Chemical Fibre Co.
Great Works, Me.

Officers

The following officers were elected by the Board of Directors to serve during 1955-56:

President

L. J. FREEDMAN
Penobscot Chemical Fibre Co.
Great Works, Me.

Vice-Presidents

W. J. DAMTOFT
Champion Paper & Fibre Co.
Canton, N. C.
G. B. AMIDON
Minnesota & Ontario Paper Co.
International Falls, Minn.
E. B. HURST
Consolidated Water Power and Paper Co.
Wisconsin Rapids, Wisc.

Executive Secretary-Treasurer

W. S. BROMLEY
220 East 42nd Street
New York, N. Y.

Assistant Treasurer

HELEN L. KOHLER
220 East 42nd Street
New York, N. Y.

Staff and Advisors

The following staff and advisors will serve the APA membership full time during 1955 with the exception of the Safety & Training Officer who will be on a partial retirement basis for 6 months of the year.

Staff

Safety & Training Officer

H. H. JEFFERSON
220 East 42nd Street
New York, N. Y.

Southern Logging Engineer

J. A. HOLEKAMP
Craddock Building
105 Calhoun Street
Sylacauga, Alabama

Northern Logging Engineer

W. H. DEROSIER
Box 608
Gorham, N. H.

Lake States Logging Engineer

H. M. SHEPARD
109 Grand Avenue
Wausau, Wisc.

Rounding out the staff are a full-time stenographer, file clerk, and mail clerk in the New York Office, and a part-time stenographer in each of the Logging Engineers' offices.

Advisors

Counsel

WISE, CORLETT & CANFIELD
122 East 42nd Street
New York, N. Y.

Washington Representative

T. H. MULLEN
711 14th Street, N. W.
Washington, D. C.

Standing Committees

To serve as advisory groups to the Board and Staff of the Association the following Standing Committees were appointed for the 1955-56 term:

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Penobscot Chemical Fibre Co.
Great Works, Me.
E. O. EHRHART
Armstrong Forest Co.
Johnsonburg, Pa.
G. B. AMIDON
Minn. & Ontario Paper Co.
Int'l Falls, Minn.
W. J. DAMTOFT
Champion Paper & Fibre Co.
Canton, N. C.
K. A. SWENNING
H & W Div. of Scott Paper Co.
Boston, Mass.
L. J. KUGELMAN
International Paper Co.
New York, N. Y.
R. W. LYONS
Kimberly-Clark Corp.
Neenah, Wisc.
G. W. E. NICHOLSON
Union Bag & Paper Corp.
New York, N. Y.
R. R. DRUMMOND
Oxford Paper Co.
Rumford, Me.
W. J. BAILEY
W. Va. Pulp & Paper Co.
New York, N. Y.

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Neenah, Wisc.
W. J. DAMTOFT
Champion Paper & Fibre Co.
Canton, N. C.
R. W. HOVEY
Oxford Paper Co.
New York, N. Y.
W. J. BAILEY
W. Va. Pulp & Paper Co.
New York, N. Y.
G. W. E. NICHOLSON
Union Bag & Paper Corp.
New York, N. Y.
L. A. WHITTLE
Brunswick Pulp & Paper Co.
Brunswick, Ga.
W. R. ADAMS
St. Regis Paper Co.
New York, N. Y.

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C. S. HERR
Brown Company
Berlin, N. H.

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Canton, N. C.

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Bogalusa, La.

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Great Works, Me.

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E. B. HURST
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Wisc. Rapids, Wisc.

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Roaring Spring, Pa.

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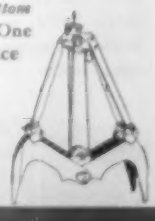
...unloads gondolas

4 TIMES FASTER

40 minute job reduced to 10 minutes

An *ESCO* Log Grapple unloads gondolas in 10 minutes, one-fourth the time formerly required at an Oregon pulp mill. With the *ESCO* Log Grapple the dangerous, time-consuming task of setting tongs on every log is eliminated. Unloading time is drastically reduced because the *ESCO* Grapple often moves three or four logs at a time. *The Grapple can pick up the logs jammed in the bottom of a gondola that are almost impossible to get with tongs.* One operator handles the entire unloading operation. Reduce your log *loading or unloading* costs with an *ESCO* Log Grapple. Get details today from your nearest *ESCO* dealer or write direct.



Stop grappling with log handling costs. Get an ESCO Grapple.

ESCO

Handy Roustabout

FOR A

"Hundred and One" Jobs

The Sturdy, Powerful, Economical

JOHN DEERE "40" CRAWLER

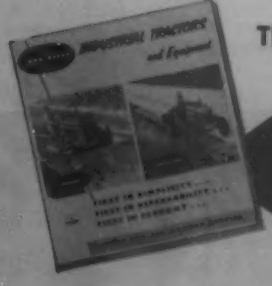
Why buy tractors that are bigger than you need? Loggers, mill operators, and farmers who have wood lots are awakening to an important fact—there's a place for this light, economical, track-type tractor to handle a wide range of jobs. And once they own a "40," they wonder how they ever got along without it!

It's the compact, but amazingly powerful tractor with the simplicity and ease of handling that feature all John Deere Tractors, a tractor that will work and earn for you every month in the year. With approximately 20 h.p. on the drawbar, it's just right for building roads and lanes, clearing and piling brush, moving sawdust, yarding logs, for pulling loaded trucks out of the mire, and many similar jobs.

You have your choice of 4- or 5-roller tracks, and there is combination steering-braking for short, quick turning. "Live" hydraulic power and deep cushion seat make the work easier for the operator. Attachments are available for every need, including high-speed and regular PTO, belt pulley, grille guard, lights, and choice of track shoes. Available equipment includes 6-foot bulldozer, loader, winch, log cart, and many other field-proved units. The "40" is sold and serviced by John Deere dealers everywhere. Get full information.

The power will surprise you. This "40" is pulling a heavy skid load of logs. Note front-mounted bulldozer.

Work production goes up; operating costs go down. Here the "40" is snaking a log out of a wood lot.



The Modern, Low-Cost "Handyman" Tractor That Does So Many Jobs So Easily

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THE *Lowther* WILD LAND TREE PLANTER

Designed for Successfully Planting Trees Wherever a Crawler Can Travel

HARRY A. LOWTHER CO.
P.O. BOX 1412 JOLIET, ILLINOIS

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Jacksonville, Fla.

Technical Committees

The two regional Technical Committees are made up of representatives of members operating within the region concerned. Lists of the personnel of these Committees are provided only to Association members. The current Chairmen are:

Appalachian

D. E. H[illegible]
Glatfelter Pulp Wood Co.
Gettysburg, Pa.

Lake States

LESTER POLLARD
Minnesota & Ontario Paper Co.
International Falls, Minn.

Northeastern

E. C. MELCHER
S. D. Warren Co.
Cumberland Mills, Me.

Southeastern

R. V. MALECKI
Union Bag & Paper Corp.
Savannah, Georgia

Southwestern

A. G. CURTIS
Gaylord Container Corp.
Bogalusa, La.

Program for 1955

In addition to its regular activities, the following are planned for this year:

1) Action on any proposed amendments to the Fair Labor Standards Act which would affect pulpwood op-

SENSATIONAL NEW PULPWOOD SAW with Superhardened teeth

MADE IN SWEDEN SANDVIK 21

That Never Need Resharpening!

Another *first* for SANDVIK! A NEW saw blade, SUPER SANDVIK NO. 21, that never needs resharpening. Made from famous Sandvik Swedish charcoal steel with super induction hardened teeth . . . two cutting teeth instead of four for every raker . . . blade only ¾" wide.

Conclusive tests prove that a woodsman can cut much more timber with a SUPER SANDVIK saw blade, easier and faster, without wasting time for resharpening. Blades come individually wrapped in moisture proof envelope for factory fresh blade every time.

Prove their superiority yourself. See them at your hardware dealer or write us direct.

Sandvik Saw & Tool
Division of Sandvik Steel, Inc.
1702 Nevins Road • Fair Lawn, N. J.

THE NEW

HIABOB

HYDRAULIC

PULPWOOD LOADER

- Loads 15 to 20 cords an hour
- Mounts on truck or crawler tractor
- Loading space lost on truck installation of loader less than 6 inches
- Safe—No clutches to slip
- Complete unit weight 1200 lbs.
- Costs less than $2000.00.

DIESEL POWER EQUIPMENT ELY MINNESOTA

erations.

2) Issuance of training guides and workers' notebooks on power saw use, chemical debarking, and animal skidding.

3) Preparation and release of "Pulpwood Industry Facts—1955" in cooperation with American Forest Products Industries, Inc.

4) Enlargement of the Association slide, print and movie library to bring it more up to date and useful to the membership.

5) Establishment of a research fellowship at the State University of New York to obtain the necessary manpower to set up and complete a Directory of Research.

6) Expansion of the activities of the Logging Engineers to include conducting safety and training sessions during the six-month period when the Safety and Training Officer is not available.

Needless to say, these plans and others hinge on the needs and wishes of the members of the Association and of the industry as a whole. The staff is well organized to carry out the jobs assigned to it by the membership through the Board of Directors. APA can be effective in serving the industry only to the extent that members first make known their wishes, and then participate in the formation of policies and in carrying them out actively.

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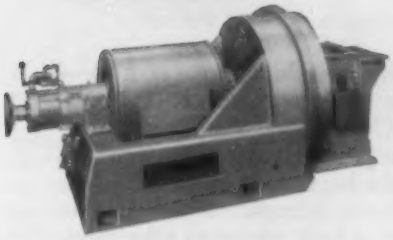
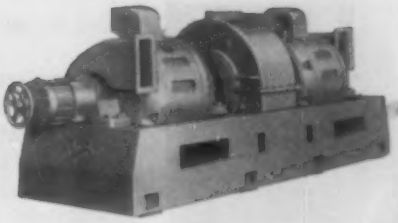
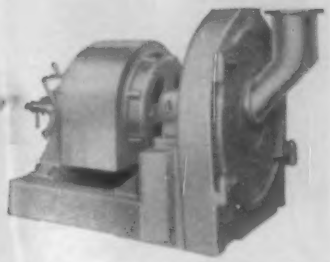
THE Bauer LINE OF EQUIPMENT *FOR THE PULP AND PAPER INDUSTRY*



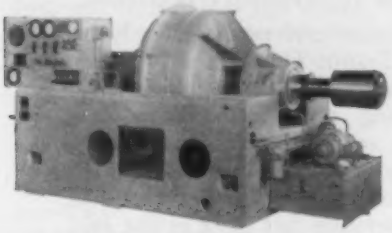
No. 510 Single Revolving Disc Refiner.
Ask for Bulletin P-10.



No. 400 Series Double Revolving Disc Refiners—3 sizes.
Ask for Bulletin P-2.



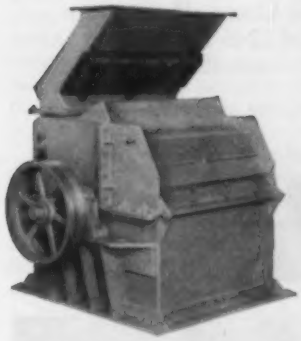
No. 240 Series Single Revolving Disc Mills—5 Sizes. (For dispersing, intensive blending, shredding.)
Ask for Bulletin A-7.



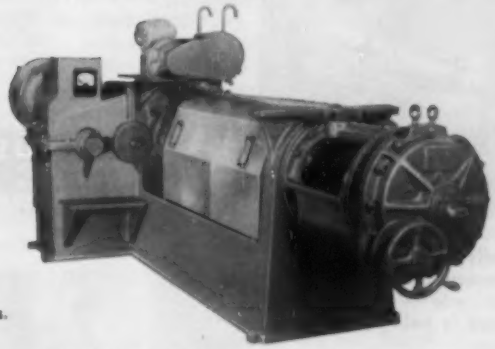
No. 440 Series Single Revolving Disc "Pump-Through" Refiners—2 Sizes.
Ask for Bulletin P-13.

No. 180 Series Double Revolving Disc Pulpers—2 sizes.
Ask for Bulletin P-3.

Bauer-McNett Fibre Classifier.
Ask for Bulletin.



Nos. 435 and 438 Chip Breakers—2 Sizes.
Ask for Bulletin P-11.



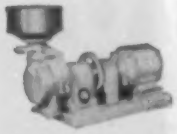
No. 460 Pressafiners—2 Sizes. *Ask for Bulletin P-12.*

Blowers and Exhausters.
Ask for Bulletin P-14.

Bauer Cleaners—7 Sizes. (For pulp and fiber slurries.)
Ask for Bulletin P-4.

Permanent Magnetic Separators—Plate, Grate, and Pulley Types.
Ask for Bulletin M-3.

Laboratory Refiner.
Ask for Bulletin P-5.



Laboratory Mill.
Ask for Bulletin P-6.

Rapid Cycle Digesters.
Ask for details.

THE BAUER BROS. CO. • 1706 Sheridan Ave. • Springfield, Ohio

Transit Cranes Speed Selective Logging

Transit Crane moves in quickly and easily for the pickup. Mounting is designed for efficient traction over rugged terrain and soft ground . . . makes turns easily in tight quarters.

The big ones are hoisted easily. Fully independent power boom hoist lets the operator boom up or down at any point in the cycle — while the machine is swinging or the load is being hoisted or lowered.

There's speed on the swing because plenty of power is available at all times for simultaneous hoist and swing. Operating responses are quick and smooth.

Exceptionally smooth, accurate control — plus complete mobility — make Bucyrus-Erie Transit Cranes ideal log-heeling units. They offer the performance ability you need for swinging the big ones in selective logging operations. Power is ample for difficult lifts and machinery is built strong to take shock loads. Carrier mountings are equally ruggedly built for timbercountry operation.

Top-flight crane performance is only one reason why Transit Cranes are profit-producers on timber tracts. Swamping roadways, chunking out cutting areas, and drainage jobs are also their meat, because they are truly convertible excavators. You can switch from crane to shovel, clamshell, or dragline operation fast right in the field, and get equal operating efficiency.

See your local distributor now for complete information on these big-capacity models — 15-B Transit Crane, 15-ton crane or ½-yd. excavator, and 22-B Transit Crane, 25-ton crane or ¾-yd. excavator. 112E55

BUCYRUS ERIE
South Milwaukee Wisconsin

1880 75 1955
YEARS OF SERVICE to Men Who Shape the Earth

The load is at the operator's fingertips because power controlled lowering on the main hoist line matches engine power against heavy loads, preventing sudden drops.

Should Supts. V.P.'s Share Travel Burden?

New president comes from unusual mill in Delaware, got his job through a customer of Bakelite products

● Interest at the 36th National Convention of the Superintendents Association, held mid-June at Cincinnati, centered on election of Tom L. Coldewey to fifth vice president (first step up the presidential ladder) and a proposal made by one leader that all vice presidents share the travel burden of the association's president.

One of the organization's vice presidents who has been busy with almost continuous expansion suggested that all five vice presidents share with the president in the annual far-flung travel requirements. The association has five divisions, coast to coast and overlapping into Canada at both extremes, and each new president is expected to visit each division as well as attend various other meetings.

Several leaders felt that with peak production in the industry and continuing expansion, conditions now call for some relaxation of this travel obligation, by having vice presidents share the duties. A plan could be worked out whereby each president could visit every division of the association, but over a period of two or three years—not crowded into his one year as president.

Next year the group holds its "National" at the Lake Placid Club, Lake Placid, N. Y., June 12-14. At that meeting the new president, Howard H. Street, manager of Yorklyn, Pa., division of National Vulcanized Fibre Co., will turn over his gavel to Martin J. Auchter, vice president in charge of manufacturing, Charmin Paper Mills. But in the meanwhile, Mr. Street faces, potentially, many thousands of miles of travel from Poland Spring, Me., to Tacoma, Wash., with other trips to Savannah, Ga., Green Bay, Wis., etc.

NEW PRESIDENT FROM UNUSUAL MILL—President Street manages operations of a mill quite different from a conventional mill. It uses purchased high alpha dissolving woodpulp, mixed with rags, to make electrical insulation and what is called vulcanized fibre paper. This is done on Fourdrinier machines, followed by laminations by an acid process. As many as 44 plies are laminated at one time.

National Vulcanized Fibre has three mills, two at Yorklyn and one at Newark, Del. Main offices are in Wilmington, Del. Yorklyn No. 2 mill, where Mr. Street works, makes 20 tons a day on a Downingtown 72-in. Fourdrinier. Four beaters, a jordan, a washer and 7 rotaries precede the machine. The other mills make only 7½ and 10 tons a day.

E. R. Perry is president of NVF. William D. Marsey is general manager of all plants and also superintendent of the one at Newark.

Mr. Street got into NVF through a buyer of its specialty products. After attending Williamson College, and doing graduate work at U. of Penn., he worked six years with an architectural woodworking company. They assigned him to work closely with their supplier, National Vulcanized, in making Bakelite products for the building trade. The latter offered him a job in sales promotion; he accepted and this led to manufacturing assignments.

Mr. Street was born in Philadelphia; then lived on a farm his father bought at Kennett Square, 30 miles away.

Following Mr. Auchter up the vice presidential ladder are Al Bachmann, Mississiquoi Corp., now second vice president; Howard Wehr, Mead Corp., Harriman, Tenn., third v.p.; and A. C. McCorry, St. Regis Paper Co., Tacoma, fourth v.p.

Newcomer to the vice presidency is Tom L. Coldewey, fifth in line. He is vice president in charge of production, St. Joe Paper Co., Port St. Joe, Fla. Interesting point is that Mr. Coldewey was born in Cincinnati 43 years ago and is a U. of Cincinnati graduate of 1937, although he had moved to Florida at the age of 10.

Harry E. Hadley of Gardner Board & Carton Co., Middletown, O., was outgoing president, presiding at Cincinnati. Olin Callighan, Minerals & Chemicals Corp., as chairman of the industrial affiliates, organized their activities, including the get-together party the final night and recognition dinner, honoring past affiliates' chairmen.

Heads Affiliates

EUGENE J. (GENE) WARD, Vice Pres. in charge of Sales, Cameron Machine Co., Brooklyn, N.Y., is new Chairman of Supts. Assn's Industrial Affiliates.

New Leaders of Supts. Assn.

HOWARD H. STREET (left), 48 years old and now Plant Mgr. of National Vulcanized Fibre Co., Yorklyn, Del., is the new Pres. of the Superintendents Assn., elected at last month's meeting in Cincinnati. A native of Philadelphia, he was 43 and Supt. at Yorklyn, when he was elected to bottom rung of the Supt.'s "ladder" which leads to its presidency. MARTIN J. (Marty) AUCHTER (right), Vice Pres. in charge of Mfg. at Charmin Paper Mills, Green Bay, Wis., is new First Vice Pres., takes over the gavel at Lake Placid, N.Y., June 12-14, 1955. Milwaukee-born Mr. Auchter was first elected a Vice Pres. at the biggest meeting the Supts. ever held—their 1951 "National" in Portland, Ore., where 888 were registered, over 1,000 attended final banquet.

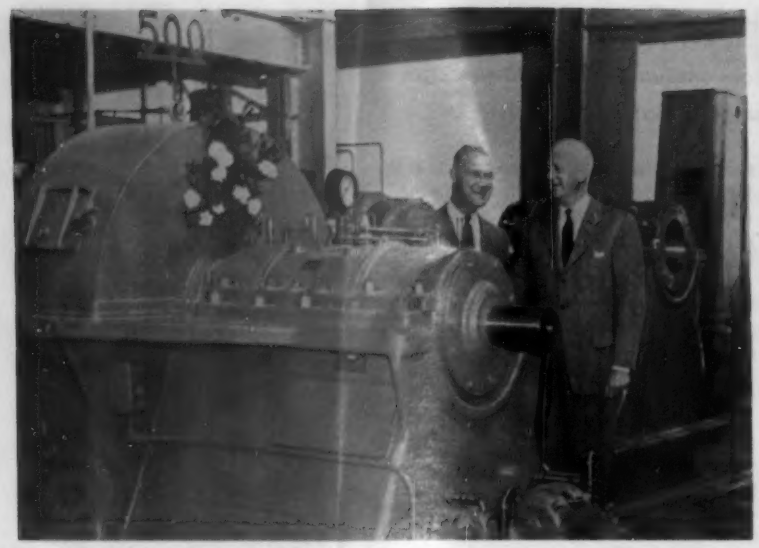
Ruling of P.O. On Paper Company Ads

Apparently clearing up an issue for all paper companies, Howard Paper Mills recently received a ruling from Norman Abrams, assistant postmaster general, which says it is permissible to state in an ad the type of paper the advertisement is printed on. For example, a recent four color insert for Howard Board states in the lower left-hand corner "Printed on Maxwell Offset, Substance 80—Wove Finish."

Mr. Abrams' letter explains this wording is permissible, but warns advertisers of paper should not go too far in this direction lest it appear that the ad is a sample of a certain type of paper.

Head Ohio TAPPI

WILLIAM H. AIKEN (left), Gardner Board & Carton Co., newly elected Chairman of Ohio TAPPI Section and HAROLD JOINER (right), Champion Paper & Fibre Co., his predecessor as Chairman, at Ladies Night dinner and dance, Cincinnati, where election was held. ELLSWORTH SHRIVER, Mead, Chillicothe, was elected Vice Chairman.



Bedecked with Flowers—No. 500

The 500th Sutherland Refiner in 19 years. It is going into a big kraft mill in the Pacific Northwest. First one continuously operating is still in Brown Paper Mills in Louisiana. This will have 500 hp drive, is fully hydraulized, with integral lubrication, with Roper pump, collers and filters and 3-phase induction motor. LIONEL SUTHERLAND, left, and RAY PETERSON, right, look happy about it.

Celebrate with Flowers and Stainless Steel

● Sutherland Refiner Corp. celebrated completion of its 500th refiner with an exhibit of products at Valley Iron Works, Appleton, Wis., and dinner on May 25, eve of this industry's Executive Conference in Appleton.

First of the Sutherland single rotating disc refiners was installed in Brown Paper Mills Co., Inc., West Monroe, La., in 1936, where it is still successfully operating, with 19 others installed there since. No. 500—a 48 in. Sutherland, to be driven by a 500 hp, 450 rpm motor—will take its place with a number of others in a big kraft mill in the Pacific Northwest. It has a new automation device attached—the Sutherland automatic fully hydraulic control unit for disc adjustments (announced in P & P, May issue, p. 101).

Checking a New Control

LIONEL SUTHERLAND is adjusting Sutherland's new fully hydraulic automatic control unit for that company's refiners. This is mounted on its No. 500 refiner, destined for a big mill in Far West.

Valley Iron Works has manufactured refiners to Sutherland design since 1938. About 100 have been made abroad, in Canada, Italy, Finland, England and Australia, and five of the most recent are going into Vita Mayer kraft mill in Italy.

Ray Peterson, president of Valley, Lionel and Douglas Sutherland, president and vice president of the Trenton, N. J., firm, were principal speakers at their Appleton dinner celebration. Mr. Peterson estimated up to 7,000,000 tons of stock per year pass through Sutherland refiners.

Lionel recalled his father, Manson Sutherland, now retired, came to Trenton in 1908 to manage Agasote Millboard Co., and organized later what is now St. Regis's Panelyte division. As a paper industry consultant, he had long been convinced that batch preparation systems should be supplanted by continuous systems, with more precise controls. A fortunate trial of a double disc refiner with only one disc rotating, going back to a basic principle of the 16th century Hollanders, led to the first Sutherland refiner.

He predicted future refiners would have greater disc life, larger capacities, less power consumption and easier control. He also discussed Sutherland's new breaker traps, designed for selective defibering, pressure washers and high yield hot stock patented refining system (U. S. Patent No. 2591106).

Down Comes the Cage

Mechanic directs lowering of cage which goes over the screen plates in this 18 x 128 in. long Sutherland screw press, one of four going into a kraft mill in Pacific Northwest states. Worm is inside the plates. Motor is mounted on gear reducer, has V-belt drive.

A "First" for Sutherland

This is Sutherland Refiner's first solid stainless steel 18 in. breaker trap, built at Valley Iron Works, and going into a sulfite pulp mill in Washington State. Designed for selective defibering, it will go on line for pulp as it leaves the blow pit. It will be driven by a 900 rpm, 150 hp motor.

Fewer Newspapers But 1.1% More Subscribers

There are 20 fewer daily newspapers in the U.S.A. than there was over a year ago, but total circulation has gained slightly.

Editor & Publisher says there were 1,765 daily papers with 55,072,480 paid circulation in late 1954. The circulation gained 1.1% over 1953. Sunday papers remained exactly the same, 544, with circulation of 46,176,450, a gain of 0.49%.

New Sonoco Plant

Sonoco Products Co., Hartsville, S.C., is placing production machinery in a 15,000 sq. ft. building in Longview, Texas, and expects operation about June 1, according to C. W. Coker, executive vice president. James L. Henderson will be resident manager.

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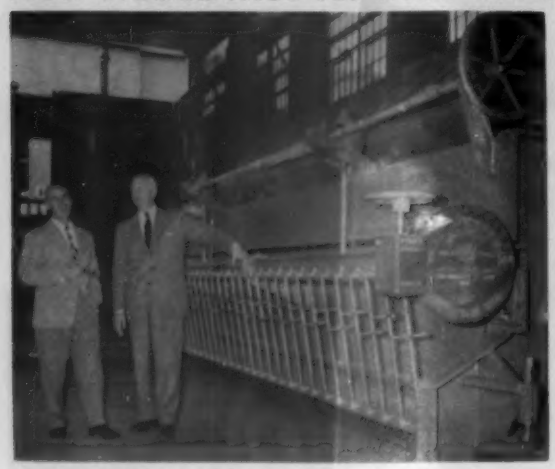
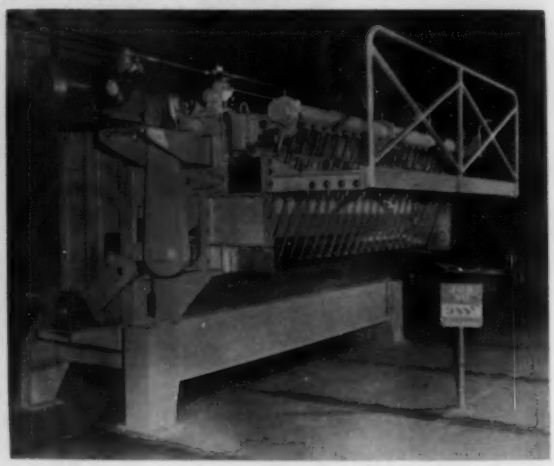
New Headboxes for Mills in Midwest and South



Another Machine Gets Secondary Headbox

Secondary headboxes give improved linerboard, better printability, etc., according to a mill report given at Victoria, B.C. (see story on Victoria meeting elsewhere). PAUL BORONOW (left), Vice Pres. and Sales Mgr., and RAY PETERSON (right), President of Valley Iron Works, are looking over a 230 in. pressure secondary headbox going to one of the biggest mills in the South. All parts contacting stock are of stainless steel, but note the immense upper part—all of hard-to-get steel—required for rigidity. It is built for 2,000 fpm, and operating parts are easily accessible.



Now Operating at Rothschild

This new inlet and headbox, 128 in. deckle, built by Valley Iron Works, is on No. 2 Machine at Marathon mill, making board and paper.

New Facilities for Rothschild and Green Bay

A new inlet and headbox has been installed on No. 2 Fourdrinier machine at the Rothschild, Wis., 4-machine sulfite pulp and paper mill of Marathon Corp.

Valley Iron Works built the equipment, which has a 128 in. deckle, and is of corrosion resistant No. 316 stainless steel. It has a wide range of flow and of stock consistencies. The machine makes board and waxing papers. Marathon millwrights installed it.

Other replacements and improvements were made on the machine. Rothschild has capacities of 210 tons a day of paper and board and 135 of sulfite pulp. Charley Wagner is resident manager and Laurin Sabatke is general paper mill supt.

Marathon also is building a 3-story in-process storage building at its Northern Mills tissue plant in Green Bay, Wis., where a new 173-in. Beloit Yankee Fourdrinier is now starting up.

The new 375 x 125 ft., 3-story building is needed for increased production, said John W. Bard, president manager. Finished products will be stored on the first floor, jumbo parent rolls on the second, labels and shipping cartons in the third.

Rising Adds Equipment

Rising Paper Co., Housatonic, Mass., has spent $100,000 recently on mill improvements, including new dryer rolls on No. 2 machine, Bauer Cleaners on No. 1 (they already were ahead of No. 2 a year ago), and also new Bird Dirtecs for both machines and a new rewinder for No. 1.

Both No. 1 and 2 are 94 in. Fourdriniers (trim 78 in.), 35 tons a day capacity of parchment bonds, writings, bristols and specialties. Fred E. May is president; R. B. Anderson, production manager, and M. L. Kemp, general supt.

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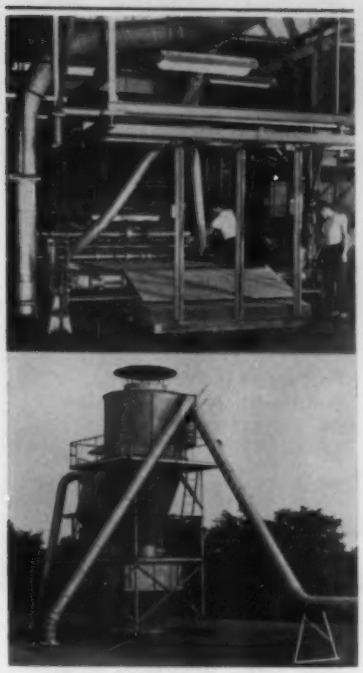

Just Like Mother's Vacuum Cleaner

How to keep operating areas clean where trimmer waste and other scraps accumulate is this installation (top picture) at Robert Gair's Fort Niagara, N.Y., plant. A large pick-up pipe at the side of the press or slitter removes scrap which gathers on the floor. Flexible ducts remove trim from the printer-slotter as it develops. A 15-hp. blower services two presses and a second 15-hp. blower in the collection system takes care of scrap from the slitters, band saw and partition slotter.

A large cyclone separator, 30 ft. high, on the roof (in lower picture) discharges into a hopper above a waste baler; eliminating manual handling. Design and installation were by Ohio Blow Pipe Co., Cleveland, O.

Here's How-NOT-To-Do-It!

For obvious reasons this "How-Not-To-Do-It" will be anonymous as to mill and personnel involved.

A machinetender on this mill's No. 4 machine was sitting and watching his machine, idly dreaming of the trout-filled stream he had discovered last weekend. Suddenly, he jumped at the sound of the whistle denoting a break on the dry end and pulled the squirt. Ordinarily, such prompt action is worthy of commendation —except that the break was on No. 3!

As the tour foreman remarked, rather drily, this was the first time he had ever seen it take so long to get the paper over No. 4 when the break was on No. 3.

BULKLEY, DUNTON, long known as the leader in water clarification, has successfully solved processing problems for more than 300 paper mills throughout the United States.

Using the **flotation** method—the most effective, **efficient** and dependable known, Bulkley, Dunton Colloidair Separators operate automatically, week in and week out on a round-the-clock schedule. Custom-engineered to job requirements, each unit is fully guaranteed with clarification performance determined not only on gpm but loading factor as well . . . a double check to assure desired result.

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PULP & PAPER

What's New in Canada's No. 1 Industry

NEW TECHNIQUES MAY CHANGE SULFITE PROCESSES—Atomization under pressure of spent liquors of chemical wood pulp manufacture may eliminate evaporation and drying processes which are time-consuming and costly, according to Dr. W. H. Gauvin, McGill University and the Pulp and Paper Institute of Canada, who presented a paper on a revolutionary process to the Chemical Institute of Canada in Montreal.

The new technique makes use of equipment of simple design and consists of a specially constructed chamber. Dr. Gauvin says sulfite spent liquors in particular can be processed quickly through a series of physical operations and chemical reactions to yield some 70% of the sulfur originally present plus other materials of potential value.

In a 10-ft. high model at the institute's laboratories in Montreal more than 90 test runs of the process have been made, and the process is believed to be commercially feasible.

Dr. A. H. Vroom, recently with Weyerhaeuser Timber Co., now assistant director of research, Consolidated Paper Corp., Three Rivers, Que., described potentials of bark as a source of chemical raw materials. He said its use as a source of insecticides, adhesives, waxes, fatty acids, etc., has not been fully explored.

BRITISH GIVE 12 PAPERS IN QUEBEC—Arthur Baker, chief technical advisor of Bowater's Paper Corp., was one of 40 members of British industry and technical groups who participated in the June 6 Quebec City summer meeting of the Canadian Technical Section. In Vancouver, June 20, the visitors were entertained at a dinner by British Columbia leaders and later toured MacMillan & Bloedel and other plants.

About 600 delegates attended the meeting in Quebec, where W. S. Cramp, resident manager of St. Lawrence Corp. at Three Rivers, Que., and chairman of the section, presided.

Twelve of 35 papers presented at the meeting were by the British group.

REPRESENTS RHODIA—Naugatuck Chemical Division of Dominion Rubber Co., Ltd., Montreal, Toronto and Winnipeg, has been named sales and technical representative in Canada for Rhodia, Inc., makers of "Alamask" industrial deodorants and aromatic chemicals.

NEW PULP-PAPER RESEARCH CENTER—The Canadian government is financing construction of a $2,000,000 pulp and paper research laboratory at Senneville, near Montreal, to be ready for use by late 1956.

The project represents consolidation rather than expansion, as it will enable the staff of the Pulp & Paper Research Institute and auxiliary groups now scattered over nine different buildings in Montreal to be accommodated in a single location where more extensive facilities will be available.

GET MORE NEWSPRINT FOR BRITAIN—A group of United Kingdom publishers flew to Montreal recently to arrange increased supplies of newsprint and continuation of long-term contracts. It is understood they were offered an additional 50,000 tons of newsprint annually, starting in 1956, provided contracts run through to 1963. The Britons had sought 100,000 tons, but mills were unable to commit themselves to such a volume. If the British government allocates required dollars, Canada's shipments to the United Kingdom will be increased accordingly. This year they are expected to total about 336,000 tons.

Patterson is Promoted; Goldsmith Joins Dominion

DR. RALPH F. PATTERSON, (left), Technical Director of Powell River Co. for the past 5 years, is new Director of Planning, and in that capacity will be in charge of research policy for the entire Powell River organization, with headquarters in Vancouver, B.C. At McGill University, he was assistant to Dr. Harold Hibbert, outstanding authority on cellulose chemistry.

PHILIP H. GOLDSMITH (right) former Gen. Sales Mgr. of Pusey & Jones Corp., Wilmington, Del., has joined Dominion Engineering Works, Montreal, where he will be Sales Mgr., Paper Machinery Div. He joined P-J in 1939. Formerly he was with Sylvia and Lynchburg mills of the Mead Corp. and with the Black-Clawson organization and also acted as a consulting engineer.

R. S. ARMITAGE, v.p. for woodlands, Price Bros., died in Montreal, aged 62.

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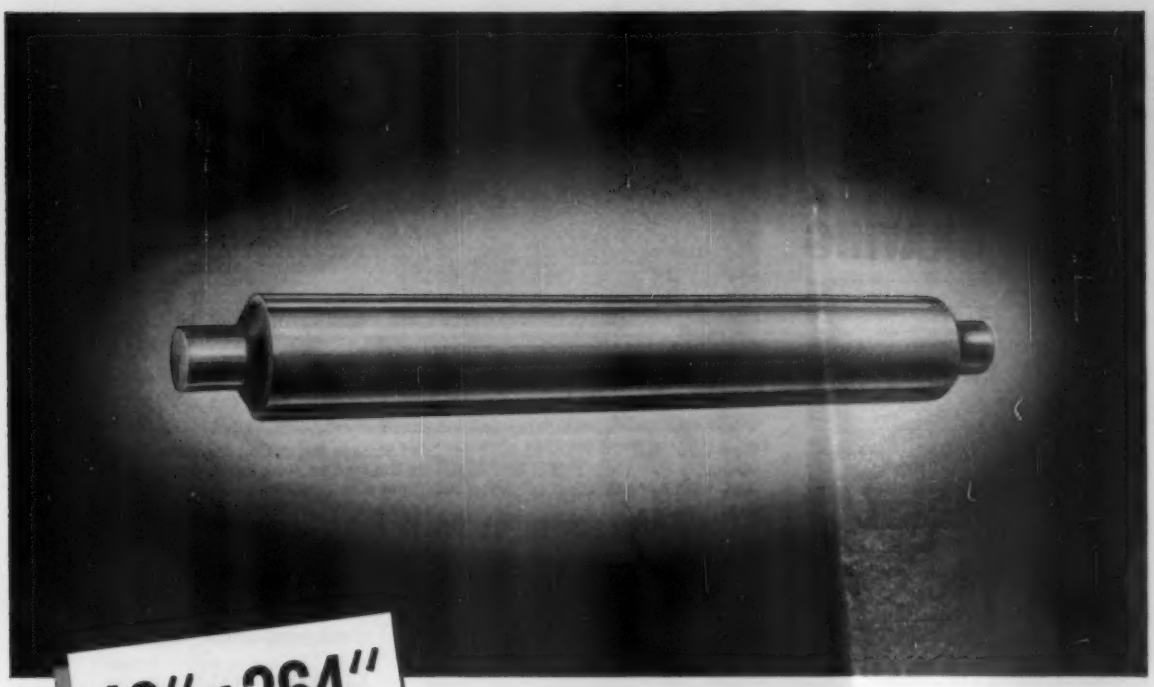

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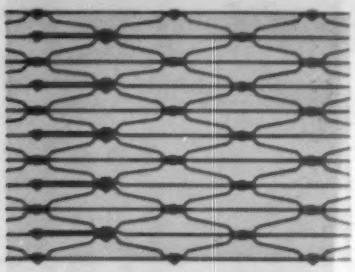

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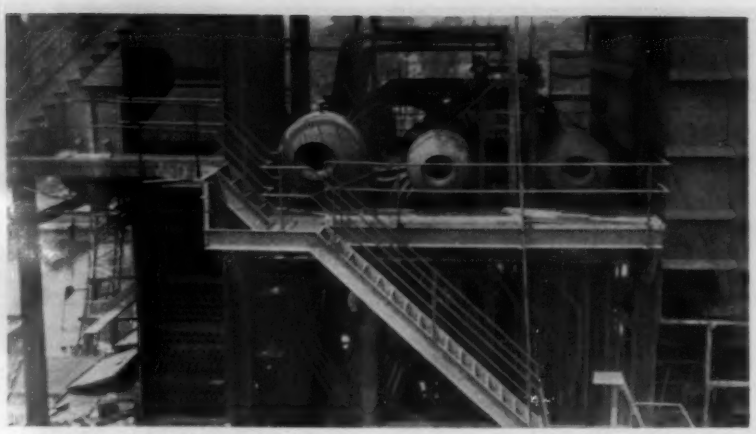


New 7,500 KW POWER PLANT for John Strange Paper Co., Menasha, Wis., went into operation last Fall. PULP & PAPER on-the-spot picture shows progress of construction, with some of maze of piping being put into position.

How Wisconsin Mill Boosted Power

● John Strange Paper Co., Menasha, Wis., recently installed a new 7,500 kw power plant to boost power output.

Union Iron Works, Erie, Pa., furnished the boiler which is a four-drum bent tube Sterling type, and has a maximum capacity of 165,000 lbs. of steam per hour at 725 lbs. pressure and 825° FTT. The stoker is a Detroit Stoker Rotograte of the continuous ash discharge type, the superheater and economizer are by Foster-Wheeler; the dust collector by Western Precipitation; the two-speed forced draft fan by Buffalo Forge; and the dual-drive induced draft fan by American Blower Corp., driven by Elliott 250 hp and 75 hp motors. Beaumont-Birch furnished the coal and ash-handling system, which will have a capacity to unload 50 tons per hour, and a coal storage of 300 tons.

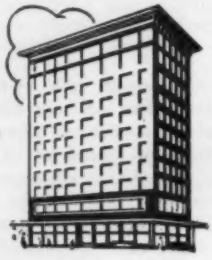
The steam turbine generating unit, with direct connected generator, was built by Allis-Chalmers. The turbine is an impulse non-condensing type exhausting at 40-50 lbs. pressure with provision for uncontrolled extraction. It operates at a steam pressure of 725 lbs. and temperature of 825° FTT. The capacity of the 4160 volt generator is 7500 kva. Switch gear also by Allis-Chalmers. Boiler feed pumps are by Pacific Pumps, one turbine driven and one electric motor driven; and instrumentation by Bailey Meter.

The mill's present capacity on three machines for wrap, chipboard and liner is 215 tons daily. Boiler and generator are ample to provide company with present requirements of steam and electric energy, plus around 25% additional for future needs.

J. G. Strange is president and J. H. Levandoski, executive vice president and general mgr. John Woehler and Henry Johnson are company power plant engineers, and Duane Williamson is resident engineer and supervised construction work and erection.

$100,000,000 Insurance

Nearly $100,000,000 in group life insurance is carried by Kimberly-Clark Corp. and its employes for their benefit. Over 95% carried the maximum for which they are eligible.



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At "10-Ring Circus in Woods"—W. A. CAUDLE (left), on whose Peachland, N.C., land, pulpwood and sawlogs were cut, operations shown. ROBERT N. HOSKINS (right), Seaboard Air Line's Industrial Forester, who directed all-day events.

Biggest Forest Show In North Carolina

More than 800 persons attended a recent forestry demonstration near Peachland, N. C., on the W. A. Caudle woodlands, sponsored by the Seaboard Air Line Railroad Co. This was the most complete forestry program ever held in the state according to State Forester Fred H. Claridge.

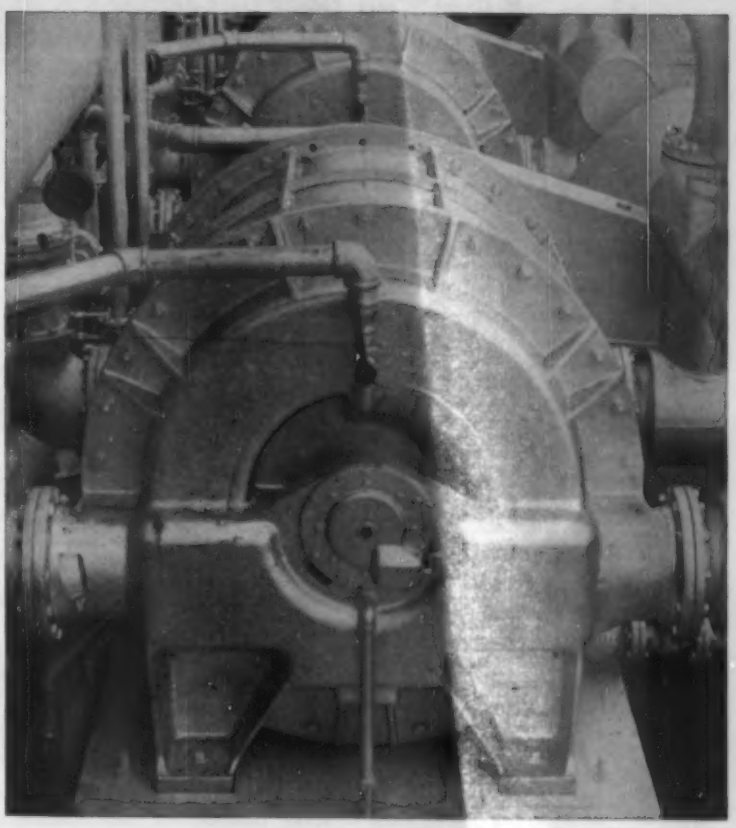
Prior to the actual meeting, one acre was marked and cut, 2400 bd. ft. of sawlogs, 9 cords of pulpwood, 4 poles, 3 crossties, and approximately one cord of oak and gum being removed. Left standing were 8000 bd. ft. of sawlogs and 4 cords of pulpwood.

The all-day program was under direction of the Seaboard's industrial forester, Robert N. Hoskins. The woods demonstrations included machine planting of 4 acres under the direction of George W. Mosely, president of Florida Forestry Equipment Co., Jacksonville, Fla. The pulpwood demonstration and discussions were led by Paul Harper and John Gillium of International Paper Co.

A sawmill operation discussion was led by Corley Mfg. Co.'s vice president, Earnest A. Clevenger. J. W. Thompson of Homelite Corp., Charlotte, N. C., discussed operation and maintenance of chain saws.

Seaboard Railroad's Warren T. White, assistant vice president, presented L. Y. (Stag) Ballentine, commissioner of agriculture, who stated that North Carolina's 1953 production of furniture, lumber, pulp and paper were valued at approximately $800,000,000. Wood products industries ranked second to textiles in the number of employes. He commended Seaboard for its leadership in forestry development.

High machine speeds? High temperature headbox stock? You need NASH Vacuum Pumps!



Air from the suction rolls on paper machines carries with it substantial quantities of moisture. This considerably reduces the effective air handling capacity of any vacuum pump except the Nash. In the Nash Vacuum Pump, because of the unique principle of operation, the bulk of this vapor is effectively condensed inside the pump. The total capacity of a Nash is therefore increased.

When you specify a Nash Pump it can be closely sized to the job. It is not necessary to select an over-sized unit, because the rated capacity of the Nash may be relied upon.

That is one of the reasons why Nash Vacuum Pumps are installed in over a thousand leading Paper Mills. An engineer from Nash will be glad to survey your mill, and make recommendations, entirely without obligation to you.

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EQUIPMENT AND SUPPLY NEWS

BLACK-CLAWSON Co.'s latest development in cylinder mold design and construction is their "Ripple Surface" cylinder, said to embody many unique and practical principles providing greatly increased wire life, double drainage rate of conventional molds and better formation, due to reduction of turbulence within the mold interior.

JOHNS-MANVILLE's new booklet, "Get Perfect Water Clarity with Celite Filtration," covers potable water, process water and plant wastes. Write to J-M, 22 E. 40 St., N.Y. 16, N.Y.

National Forest Timber for Sale

LOCATION AND AMOUNT—This sale includes 7,500,000,000 feet B.M., more or less, of merchantable timber of western hemlock, Sitka spruce, western redcedar, Alaska-cedar and other species designated for cutting within Pulptimber Allotments A and A-1, and part of Pulptimber Allotment C in the general vicinity of Admiralty and Chichagof Islands and Lynn Canal, within the Tongass National Forest, Alaska. The boundaries of the sale area and Allotments A, A-1 and C are shown on maps on file at the office of the Regional Forester, Juneau, Alaska, and the Chief, Forest Service, Washington, D. C.

SALE CONDITIONS—A sample timber sale contract which fully states the conditions of sale is available on request from the Regional Forester, Juneau, Alaska, or the Chief, Forest Service, South Agriculture Building, Washington 25, D. C.

STUMPAGE PRICES—The appraised value of the timber according to long-term normal market and operating conditions is $2.65 per thousand board feet for Sitka spruce, $1.30 per thousand board feet for western hemlock, western redcedar, Alaska-cedar and other species. No bid will be considered which is less than these rates as a base rate applicable through the entire period of the sale contract, plus at least $.85 per thousand board feet for Sitka spruce and $.20 per thousand board feet for western hemlock, western redcedar and Alaska-cedar, the total to apply to all timber cut prior to January 1, 1971. Rates for all species and products are subject to redetermination by the Forest Service on January 1, 1971, and at five-year intervals thereafter. In no event shall redetermined rates be less than the base rates set forth in this paragraph, nor shall rates lower than those bid become effective until 250,000,000 board feet of timber has been paid for, cut and scaled.

In addition to the prices bid for stumpage, a deposit of $.20 per M board feet for all material scaled as logs will be required for use by the Forest Service in improvement of the future stand of timber on the areas cut over.

QUALIFICATIONS FOR BIDDING—Parties wishing to enter bids must file with the Regional Forester, P. O. Box 1631, Juneau, Alaska, on or before August 3, 1955, statements evidencing (1) their financial and other resources to make surveys, designs and plans needed prior to operation and construction; (2) general manner in which the entire project will be financed if the bidder is declared the successful one; (3) names, business standing the experience of the prospective bidder and his associates in the manufacture and distribution of forest products, and in the construction or operation of industrial projects; and (4) the plan of operating and marketing which the prospective bidder will follow if he is the successful bidder and qualifies for final award. The Regional Forester will inform each applicant on or before August 10, 1955, whether he has qualified as a bidder. No applicant will be approved as a bidder unless his statement shows, in the opinion of the Forest Service, reasonable evidence that he will be able to qualify for the final award of the timber sale contract.

The right is reserved upon published notice prior to July 29, 1955, to extend the date for receipt of qualifying statements and of bids. Prior to July 1, 1956, the successful bidder will be required to show that he has immediately available, or will have available as needed, sufficient funds to provide the improvements, equipment, and working capital necessary to enable him to meet the requirements of the contract. As a minimum such showing before final award must include evidence that a fund of at least $15,000,000 will be available to draw on for plant construction. An extension of time for qualification for final award beyond July 1, 1956, may be granted by the Chief, Forest Service, if the successful bidder has demonstrated good faith through substantial expenditures on essential surveys, designs and plans and has evidenced his ability to qualify within such extended period.

DEPOSIT AND BOND—In addition to qualifying for bidding, any person entering a bid at the auction must post with the Forest Officer in charge as a guarantee, a bank draft or certified check in the amount of $25,000, payable to the Forest Service, USDA, which will, in the case of the successful bidder, be applied to the purchase price of the timber or retained as liquidated damages. Remittances of unsuccessful bidders will be returned immediately after completion of the auction. Within fourteen days of designation at the auction the successful bidder must also deposit with the Forest Service negotiable securities of the United States to the value of $75,000 (face value) or make an additional deposit of $75,000 payable to the Forest Service, USDA, as an additional guarantee of qualification for final award and execution of the sale contract within the specified time limits. In event the successful bidder fails to furnish a financial statement, to execute the sale contract and to furnish the bond required by its terms by July 1, 1956, or not to exceed such additional extension of time as may be granted by the Chief, Forest Service, then, in view of the difficulty of estimating the actual damages which will be sustained thereby, said deposits and said securities shall be retained by the United States as liquidated damages. Upon furnishing these financial statements, executing the contract, and furnishing the bond, the additional deposit of $75,000 will be returned to the purchaser.

AUCTION BIDDING—Oral auction bids will be received by the Regional Forester, Federal and Territorial Building, Juneau, Alaska, starting at 2:00 p.m. on August 17, 1955. Each qualified bidder must, prior to the beginning of the auction, submit a sealed bid as a qualification to participate in the oral bidding. Preliminary award to the highest qualified bidder will be made at the close of bidding. Such high bidder must thereupon immediately sign a "Bid for Advertised Timber" at the highest rate bid by him at the auction. The right to reject any and all bids is reserved.

PLANT CONSTRUCTION REQUIREMENTS—The contract contains requirements for installation of a pulpmill, and also a schedule of dates on which various showings required of the purchaser are due. Prospective bidders should familiarize themselves with these requirements. Full information concerning the character of the timber, conditions of sale, and requirements to qualify as a bidder, may be obtained from the Chief, Forest Service, South Agriculture Building, Washington 25, D. C., or the Regional Forester, Juneau, Alaska.

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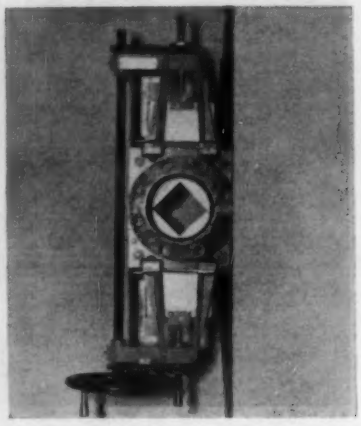

A New Stock Valve

THIS IS NEW Ferguson Throttling Stock Valve designed for throttling and metering of paper stock and pulp and recommended for controlling stock flows to critical processes, paper machine fan pumps, jordans, refiners or washers. The valve embodies two gates, sliding in opposite directions with a V-notch cut in each. For information write to JOHN B. CHANDLER, Hank D. Jones Co., P.O. Box 1748, Atlantic Beach, Fla.

BINGHAM PUMP CO., 2800 N.W. Front St., Portland, 10, Ore., offers on request a 32 page book with numerous pictures, "A Technical Treatise on Advancement of Centrifugal Pump Design," and copies of an article, "Ways and Means of Reducing Pump Costs." Requests may be made to branches.

MONSANTO CHEMICAL CO. announces a new wet strength, melamine type formulation, trademarked Scriptite 33. Sample and copies may be obtained through Dept. SB, Monsanto Chemical Co., Springfield, Mass.

HAMMEL-DAHL CO.'s Ultravalve, incorporating all features of special valves used on the most dangerous applications, has now been made the Standard 1000 Series of their control valve line. Ask for bulletin 103-B, Hammel-Dahl Co., 175 Post Rd., Providence 5, R.I.

SANDY HILL'S KAMYR centrifugal stock pumps are discussed in their new pump bulletin No. 55-101. Special feature of the bulletin is that the rpm, hp, and per cent of efficiency may be determined directly or by interpolation from the Performance Chart. Write Hudson Falls, N. Y., for copies.

MILTON ROY CO.'s new bulletin No. 455, "Controlled Volume Pumps in Paper Making" shows how paper mill operators can effectively use these pumps to meter chemicals in stock preparation, bleaching, coating, slime and foam control and water treating. Case histories are given. For copies write Milton Roy Co., Station F, 1300 E. Mermaid Lane, Philadelphia 18, Pa.

COCHRANE's C-B System of condensate control is said to offer greatly improved heat transfer in process equipment with substantial fuel savings. Write for Publication 6025, Cochrane Corp., Philadelphia 32, Pa.

POPE & TALBOT INC. LUMBER DIV., Wood Preserving Dept., 3070 N.W. Front Ave., Portland 10, Ore., offers a new 12-page report on pressure-treated, chemically-treated Douglas fir lumber materials of all kinds; supplied on request.

ROSS ENGINEERING CORP., 444 Madison Ave., New York 22, N.Y., offers a new booklet, mailed on request, on "Newer Major Manufacturing Developments" in which it has played a part.

REICHHOLD CHEMICALS, INC. has just produced a film, "New World of Chemistry," about synthetic resins and their applications. Time-lapse photography is used as well as color and black and white. The film can be had from Reichhold, 525 North Broadway, White Plains, N.Y.

NEW YORK BELTING & PACKING CO., subsidiary of U.S. RUBBER CO., will market a new package conveyor belt with a non-skid surface, capable of carrying packages up grades as steep as 45°. It is called Para-lift.

For Appleton Woolen Mills In New England, Lake States

CLAIRE TURNER (left), of Appleton, Wis., for the Lakes States, and JACK MAZEAU (right), of Portsmouth, N. H., for New England, are new Representatives of Appleton Woolen Mills, as announced by Gen. Mgr. F. H. ORBISON. MIKE McMAHON's retirement for health reason was announced last month and Mr. Turner, who was a McMahon protege, took over the Minn.-Mich.-Wis. territory. Born in Ladysmith, Wis., Mr. Turner has been with Appleton Woolen 5 years, prior to which he was Mgr. and Supt. of Pollock Paper Corp., Columbus, O. Mr. Mazeau, 35, was a starch supplier's representative to New England paper mills. He served with Navy in WW II, graduated from U. of New Hampshire in chem. eng., took p.g. work at U. of Rochester.

S. W. FLETCHER, president, J. O. Ross Engineering Corp., has been elected a director, Columbian Carbon Co.

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TIDLAND shafts prevent core damage . . . Cores no longer needed in many cases

The new Tidland pneumatic wind and unwind shafts prevent all damage to cores. They also speed up your winding operations and increase production as much as 47%, time studies show.

Core damage is eliminated by the tight grip the Tidland shafts exert along the full length of cores, preventing all slippage. Metal tip cores are no longer needed. *Many Tidland shafts are used without cores.*

Tidland's leaf-type shaft for surface rewind is prepared for use by inflating an inner tube to expand the leaves. When the roll is fully wound, the shaft is readily removed with minimum effort by releasing the air pressure, which retracts the leaves.

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Tidland shafts require no lead hammers, chucks, wedges, set screws, etc. Each shaft is equipped with air hose and nozzle.

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Solids-Contact Reactors

cut costs

IN PAPER MILLS

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Because of the Reactor's special "catalytic" action, the newly-formed precipitates plate out and grow rapidly—provide more complete reactions and produce clear water in shorter time, saving in size of the tanks employed. Chemical savings are impressive, and water waste is kept to a minimum. De-sludging is completely automatic. For further information, write for Publication 5001-A.

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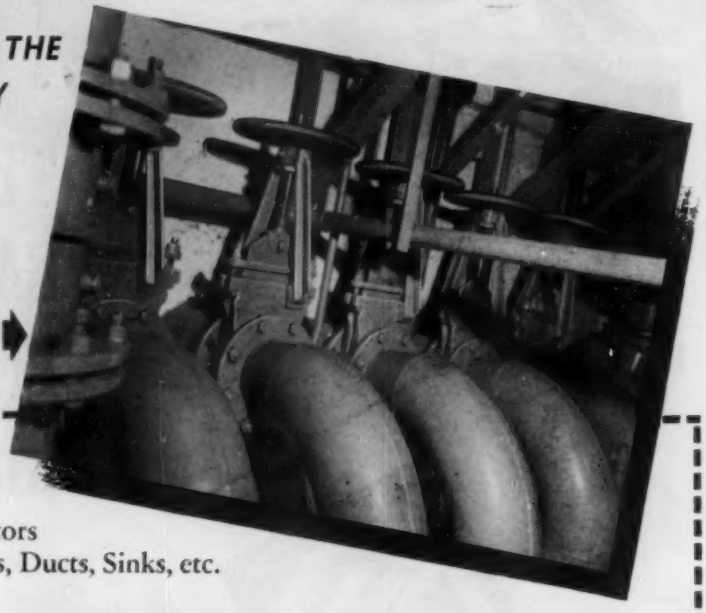

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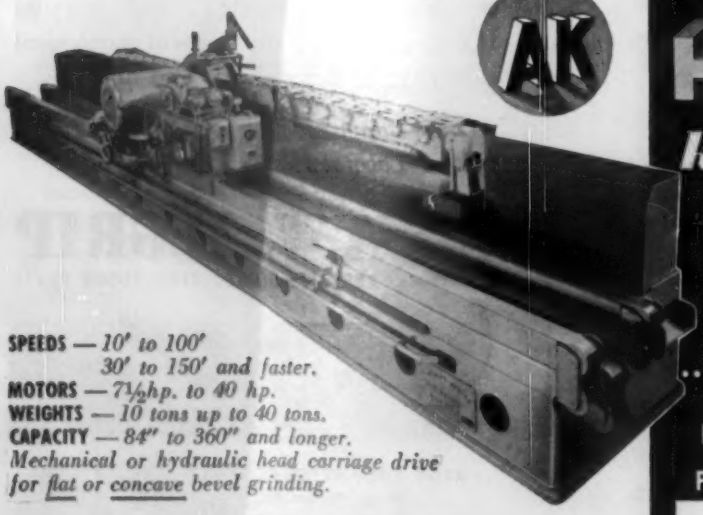
MODEL AK



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SEMI OR FULL AUTOMATIC
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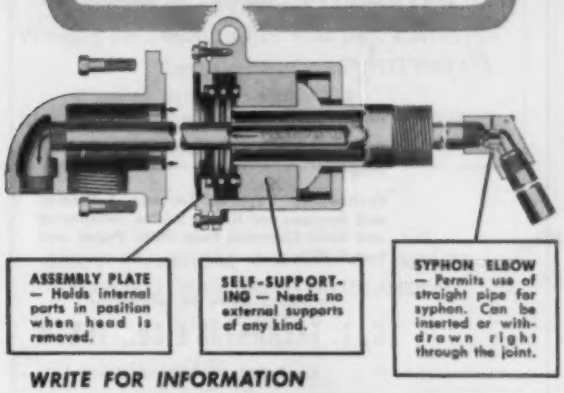
Johnson Joint

SELF-SUPPORTED TYPE with SYPHON ELBOW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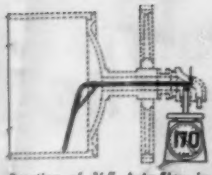
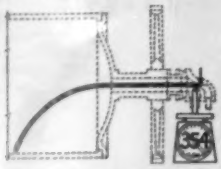


Reaction of 3/8" Auto-Flex in 48" diameter dryer. Very low leverage.



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